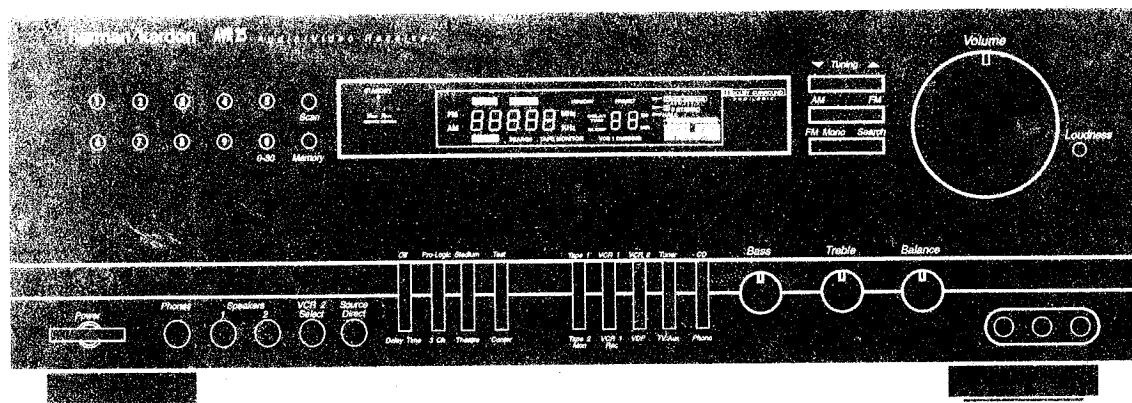


# The Harman Kardon Model AVR25 AUDIO AND VIDEO RECEIVER

Manual 188A

## Technical Manual



### ■ CONTENTS ■

SPECIFICATIONS .....	2	GENERAL UNIT PARTS LIST .....	28
LEAKAGE TEST .....	4	GENERAL UNIT .....	29
CONTROLS AND FUNCTIONS .....	5	PRINTED CIRCUIT BOARDS .....	31
DISASSEMBLY PROCEDURES .....	7	ELECTRICAL PARTS LIST .....	37
ALIGNMENT PROCEDURES .....	9	ICS LEAD & IDENTIFICATION .....	46
CIRCUIT DESCRIPTION .....	12	SCHEMATIC DIAGRAMS .....	55
BLOCK DIAGRAM .....	21	TRANSISTORS .....	61
WIRING DIAGRAM .....	23	LEAD & IDENTIFICATION	
TROUBLE SHOOTING .....	25		

**harman/kardon**

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## SPECIFICATIONS

## ● FRONT AMP SECTION

RMS Output Power

THD ( 0.09 %, 8 ohms)  $\geq 68$  W  $\geq 65$  W

Both Channel Driven (20 Hz-20 kHz)

THD (20Hz-20kHz) at 65 W, 8 ohms

20 Hz  $\leq 0.09$  %  $\leq 0.2$  %1 kHz  $\leq 0.09$  %  $\leq 0.2$  %20 kHz  $\leq 0.09$  %  $\leq 0.2$  %

IM Distortion at 65 W, 8 ohms, 60:700 Hz=4:1

 $\leq 0.1$  %  $\leq 0.2$  %

Input Sensitivity at 65 W, 8 ohms

Phono (MM) 2.5 mV  $2.5 \pm 0.3$  mVCD, AUX, VCR 150 mV  $150 \pm 30$  mV

S/N Ratio Input Shorted at Volume Max

(WTD IHF-A) at 65 W, 8 ohms

Phono  $\geq 72$  dB  $\geq 68$  dBCD, AUX  $\geq 91$  dB  $\geq 88$  dBTV, VCR1, 2  $\geq 91$  dB  $\geq 88$  dB

Phono Overload at 1 kHz, THD: 0.5 % Phono

Input  $\rightarrow$  Tape Monitor Output  $\geq 140$  mV  $\geq 130$  mV

Phono Equalization

RIAA 30 Hz-15 kHz, Tape Monitor, Output

RIAA  $RIAA \pm 1.0$  dB

Tone Control

Bass, 100 Hz  $\pm 10$  dB  $\pm 10 \pm 2$  dBTreble, 10 kHz  $\pm 10$  dB  $\pm 10 \pm 2$  dB

Loudness contour at -40 dB

100 Hz +6 dB  $6 \pm 2$  dB10 kHz +3 dB  $3 \pm 2$  dB

Frequency Response at 1W, 8 ohms

CD/AUX

20 Hz, 20 kHz  $\pm 0.5$  dB  $\pm 1$  dB

Channel Crosstalk Input Shorted at 65 W, 8 ohms

1 kHz  $\geq 55$  dB  $\geq 50$  dB10 kHz  $\geq 45$  dB  $\geq 40$  dB

## ● CENTER AMP SECTION

RMS Output Power.

THD = 0.09 %, 8 ohms, 1 kHz

Only Center Channel Driven  $\geq 67$  W  $\geq 60$  W

S/N Ratio

Input Shorted, IHF-A WTD  $\geq 78$  dB  $\geq 73$  dB

Frequency Response at -3 dB

Normal 100-20 kHz 150-15 kHz

Wide 20-20 kHz 50-15 kHz

## ● REAR AMP SECTION

RMS Output Power.

THD = 1 %, 8 ohms, 80 Hz-7 kHz  $\geq 27$  W x 2  $\geq 25$  W x 2

Both Rear Channel Driven

S/N Ratio

Input Shorted, (IHF-A WTD)

Dolby  $\geq 65$  dB  $\geq 63$  dBStadium  $\geq 65$  dB  $\geq 63$  dBTheater  $\geq 65$  dB  $\geq 63$  dB

Frequency Response at -3 dB

8 ohms, Dolby Pro-Logic 80-7 kHz 100-6 kHz

## ● VIDEO SECTION

Input Sensitivity/Impedance.

VCR1, VCR2, VDP 1 Vp-p/75  $\Omega$  dB 1 Vp-p/75  $\Omega \pm 0.5$  dB

Output Level/Impedance

VCR1, REC out, TV Monitor Out

1 Vp-p/75  $\Omega$  dB 1 Vp-p/75  $\Omega \pm 0.5$  dB

Frequency Response at -3 dB

DC -10 MHz 5-6 MHz

Crosstalk at 1.0 MHz

 $\geq 50$  dB  $\geq 45$  dB

## ● FM SECTION

Tuning Cover Range 50 kHz Step

Low 87.5 MHz

High 108.0 MHz

Usable Sensitivity (75 ohms Input)

S/N 30 dB UL/CSA  $\leq 11.2$  dBf  $\leq 17.2$  dBf

S/N 26 dB Europe

Image Rejection (at 106 MHz)

UL/CSA  $\geq 60$  dB  $\geq 55$  dBEurope  $\geq 90$  dB  $\geq 80$  dB

IF Rejection (at 90 MHz)

 $\geq 110$  dB  $\geq 100$  dB

Full Limiting (at -3 dB)

 $\leq 12.2$  dBf  $\leq 15.2$  dBf

50 dB Quieting Sensitivity( at 98 MHz, 75 k DIV)

IHF Band Pass Filter

Mono  $\leq 19.2$  dBf  $\leq 23.2$  dBfStereo  $\leq 40.2$  dBf  $\leq 43.2$  dBf

Distortion (1 kHz 100 % MOD at 98 MHz)

IHF Band Pass Filter

Mono  $\leq 0.2$  %  $\leq 0.5$  %Stereo  $\leq 0.4$  %  $\leq 0.7$  %

S/N Ratio (1 mV 75K DIV Input 100 % MOD, at 98 MHz)

IHF Band Pass Filter

Mono  $\geq 70$  dB  $\geq 65$  dBStereo  $\geq 65$  dB  $\geq 60$  dB

Frequency Response (20 Hz-15 kHz)

 $\pm 1.5$  Hz  $\pm 3$  Hz

AM-Rejection Ratio

(100  $\mu$ V-20 mV Input) $\geq 60$  dB  $\geq 50$  dB

Search Level (at 98 MHz)

31.2 dBf  $31.2 \pm 5$  dBf

Automatic Stereo Threshold (at 98 MHz)

31.2 dBf  $31.2 \pm 5$  dBf

	Nominal	Limit
Muting Threshold. (at 98 MHz)	31.2 dBf	31.2 ± 5 dBf
Overload. at 98 MHz		
(100 % MOD 100 mV RF Input)	≤ 0.2 %	≤ 0.5 %
Suprious Response.		
(at 98 MHz Antenna Input 3 μV)	≥ 70 dB	≥ 60 dB
Capture Ratio 40/60 dBf	≤ 2 dB	≤ 2.5 dB
Alternative Channel Selectivity.	≥ 65 dB	≥ 55 dB
(Input at 98 MHz)	± 400 kHz	
Stereo Separation. (100% MOD, 1 mV Input at 98 MHz)		
IHF Band Pass Filter		
100 Hz	≥ 40 dB	≥ 35 dB
1 kHz	≥ 45 dB	≥ 40 dB
10 kHz	≥ 35 dB	≥ 30 dB
Output Voltage. (at 75 kHz DEV, 1 kHz MOD, 1 mV Input)		
Mono	500 mV 500 ± 100 mV	
Stereo	450 mV 450 ± 100 mV	

● AM SECTION

Tuning Cover Range. 10 kHz/9 kHz Step	
Low	520/522 kHz
High	1710/1611 kHz

Usable Sensitivity.	Nominal	Limit
(400Hz, 30% MOD, S/N 20 dB)	≤ 500 μV/m	≤ 800 μV/m
Image Rejection. (at 1400 kHz)	≥ 35 dB	≥ 30 dB
IF Rejection. (at 600 kHz)	≥ 60 dB	≥ 50 dB
AGC Figure of Merit.	≥ 50 dB	≥ 45 dB
(From 100 mV/m at 1000 kHz)		
Distortion.	≤ 0.5 %	≤ 1.2 %
(400 Hz, 30% MOD, 5 mV/m Input)		
IF Bandwidth	6 kHz	4-9 kHz
(6 dB Down, 350 μV/m)		
Audio Response. (5 mV/m Input 1 kHz 0 dB, 1000 kHz)		
at -6 dB	80 -2.3 kHz	100-2 kHz
Selecticity. at 350 μV/m		
± 10 kHz.	≥ 25 dB	≥ 20 dB
S/N Ratio (1000 kHz, With Antenna Input 5 mV/m)		
	≥ 45 dB	≥ 40 dB
RF Overload 400 Hz 80 % MOD, 100 mV/m Input.		
	≤ 5 %	≤ 10 %
Search Level. (at 1000 kHz)	800 μV	800 ± 6 dBμV
Output Voltage. (400 Hz 30 % MOD 5 mV/m Input)		
	165 mV	165 ± 40 mV
Whistle	≤ 7 %	≤ 12 %

**Note :** Nominal spesces represent the design specs. All units should be able to approximate these-some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable ; in no case should a unit fail to meet limit specs. This manual is based on the American Standard wiring diagram, and information on regional component variations through use of parts list. Design and specifications subject to change without notice for improvement.

## LEAKAGE TEST

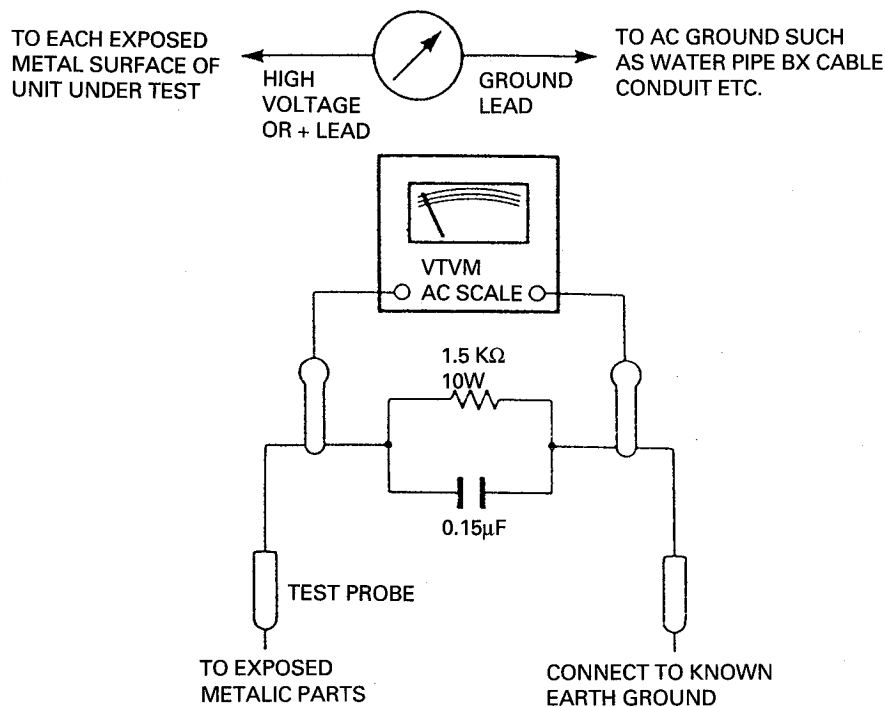
Before returning the unit to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metallic parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. Which were removed for servicing are properly reinstalled.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item no. 21641, RCA model WT540A or use alternate method as follows: plug the power cord directly into a 120-volt AC receptacle (do not use an Isolation transformer for this test).

Using two clip leads, connects a 1500 ohm, 10-watt resistor paralleled by a 0.15 $\mu$ F capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor. (see diagram) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the on and off positions.)

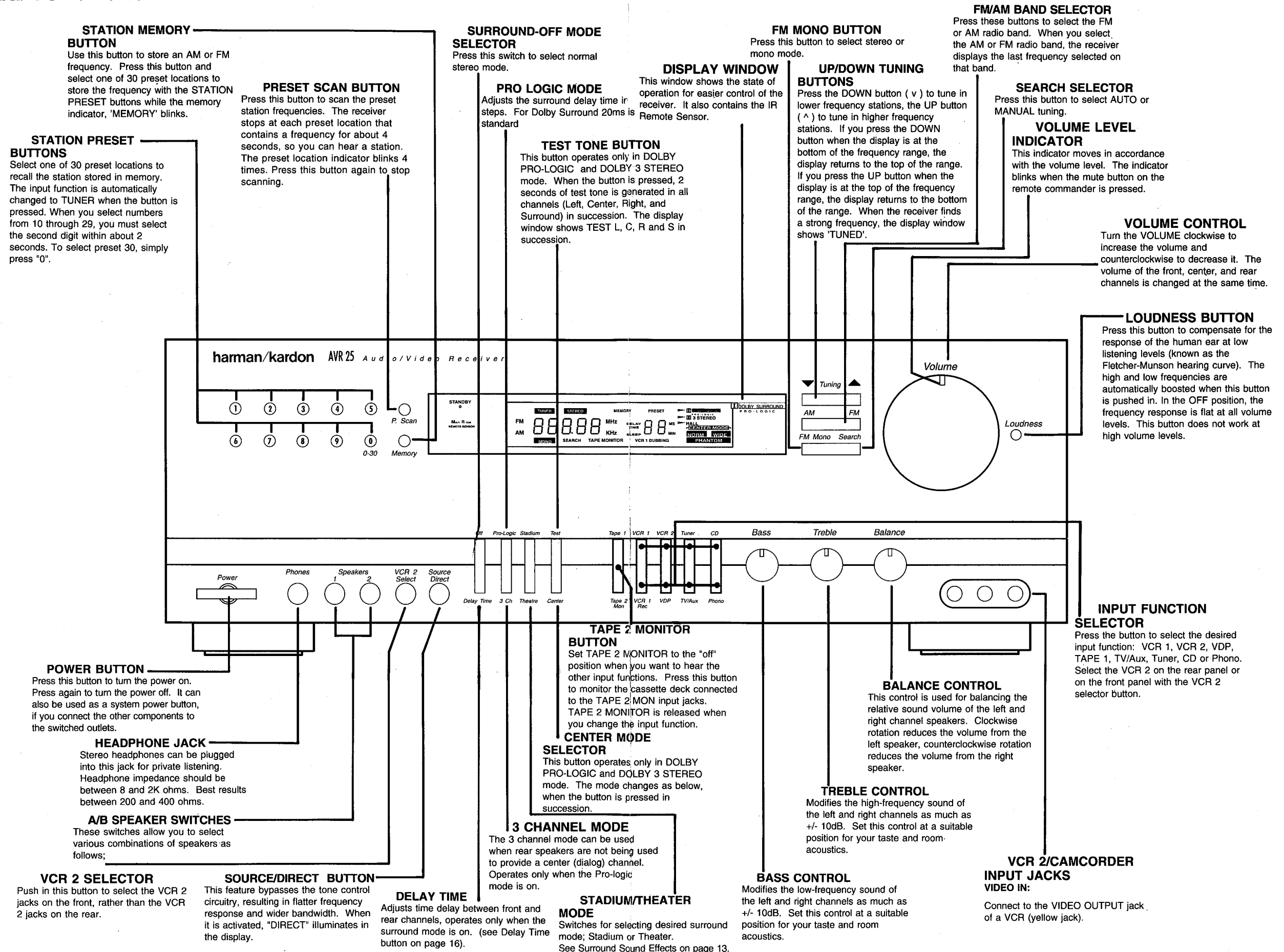
A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.

### SIMPON MODEL 229 ETC. FOR LEAKAGE TEST





## CONTROLS AND FUNCTIONS



# CONTROLS AND FUNCTIONS

## STATION MEMORY

### STATION MEMORY BUTTON

Use this button to store an AM or FM frequency. Press this button and select one of 30 preset locations to store the frequency with the STATION PRESET buttons while the memory indicator, 'MEMORY' blinks.

## PRESET SCAN BUTTON

Press this button to scan the preset station frequencies. The receiver stops at each preset location that contains a frequency for about 4 seconds, so you can hear a station. The preset location indicator blinks 4 times. Press this button again to stop scanning.

## STATION PRESET BUTTONS

Select one of 30 preset locations to recall the station stored in memory. The input function is automatically changed to TUNER when the button is pressed. When you select numbers from 10 through 29, you must select the second digit within about 2 seconds. To select preset 30, simply press "0".

## SURROUND-OFF MODE SELECTOR

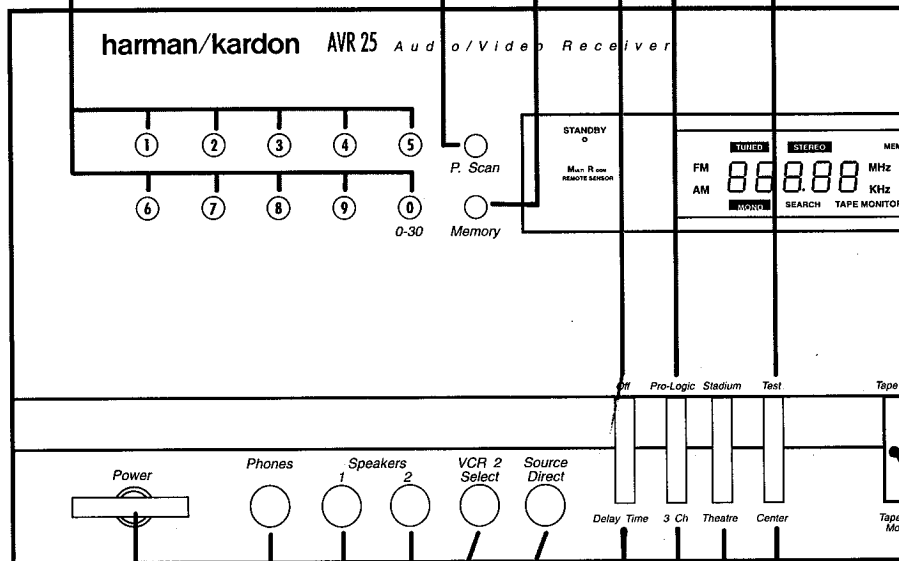
Press this switch to select normal stereo mode.

## PRO LOGIC MODE

Adjusts the surround delay time in steps. For Dolby Surround 20ms standard

## TEST TONE

This button operates on PRO-LOGIC and DOLBY mode. When the button is pressed, seconds of test tone is sent to the channels (Left, Center, Surround) in succession. The display window shows TEST L, R, C, S in succession.



## POWER BUTTON

Press this button to turn the power on. Press again to turn the power off. It can also be used as a system power button, if you connect the other components to the switched outlets.

## HEADPHONE JACK

Stereo headphones can be plugged into this jack for private listening. Headphone impedance should be between 8 and 2K ohms. Best results between 200 and 400 ohms.

## A/B SPEAKER SWITCHES

These switches allow you to select various combinations of speakers as follows:

## VCR 2 SELECTOR

Push in this button to select the VCR 2 jacks on the front, rather than the VCR 2 jacks on the rear.

## SOURCE/DIRECT BUTTON

This feature bypasses the tone control circuitry, resulting in flatter frequency response and wider bandwidth. When it is activated, "DIRECT" illuminates in the display.

## DELAY TIME

Adjusts time delay between front and rear channels, operates only when the surround mode is on. (see Delay Time button on page 16).

## TAPE 2 MONITOR

Set TAPE 2 position when you want to monitor the TAPE 2 MONITOR input to the TAPE 2 MONITOR. You change the input when you change the TAPE 2 MONITOR.

## CENTER CHANNEL SELECTOR

This button operates on PRO-LOGIC and DOLBY mode. The mode is selected when the button is pressed in succession.

## 3 CHANNEL MODE

The 3 channel mode can be used when rear speakers are not being used to provide a center (dialog) channel. Operates only when the Pro-Logic mode is on.

## STADIUM MODE

Switches for stadium mode; Stadium mode is on. See Surround

## OFF MODE

to select normal

## LOGIC MODE

surround delay time in  
Dolby Surround 20ms is

## TEST TONE BUTTON

This button operates only in DOLBY PRO-LOGIC and DOLBY 3 STEREO mode. When the button is pressed, 2 seconds of test tone is generated in all channels (Left, Center, Right, and Surround) in succession. The display window shows TEST L, C, R and S in succession.

## FM MONO BUTTON

Press this button to select stereo or mono mode.

## FM/AM BAND SELECTOR

Press these buttons to select the FM or AM radio band. When you select the AM or FM radio band, the receiver displays the last frequency selected on that band.

## DISPLAY WINDOW

This window shows the state of operation for easier control of the receiver. It also contains the IR Remote Sensor.

## UP/DOWN TUNING

### BUTTONS

Press the DOWN button (v) to tune in lower frequency stations, the UP button (^) to tune in higher frequency stations. If you press the DOWN button when the display is at the bottom of the frequency range, the display returns to the top of the range. If you press the UP button when the display is at the top of the frequency range, the display returns to the bottom of the range. When the receiver finds a strong frequency, the display window shows "TUNED".

## SEARCH SELECTOR

Press this button to select AUTO or MANUAL tuning.

## VOLUME LEVEL

### INDICATOR

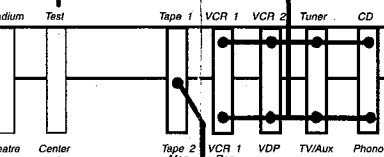
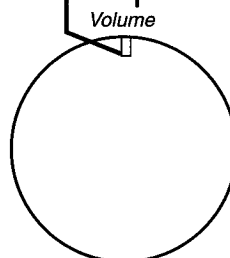
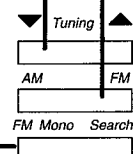
This indicator moves in accordance with the volume level. The indicator blinks when the mute button on the remote commander is pressed.

## VOLUME CONTROL

Turn the VOLUME clockwise to increase the volume and counterclockwise to decrease it. The volume of the front, center, and rear channels is changed at the same time.

## LOUDNESS BUTTON

Press this button to compensate for the response of the human ear at low listening levels (known as the Fletcher-Munson hearing curve). The high and low frequencies are automatically boosted when this button is pushed in. In the OFF position, the frequency response is flat at all volume levels. This button does not work at high volume levels.



## TAPE 2 MONITOR

### BUTTON

Set TAPE 2 MONITOR to the "off" position when you want to hear the other input functions. Press this button to monitor the cassette deck connected to the TAPE 2 MON input jacks. TAPE 2 MONITOR is released when you change the input function.

## CENTER MODE SELECTOR

This button operates only in DOLBY PRO-LOGIC and DOLBY 3 STEREO mode. The mode changes as below, when the button is pressed in succession.

## CHANNEL MODE

Channel mode can be used for speakers not being used as a center (dialog) channel. only when the Pro-logic on.

## STADIUM/THEATER

### MODE

Switches for selecting desired surround mode; Stadium or Theater. See Surround Sound Effects on page 13.

## BALANCE CONTROL

This control is used for balancing the relative sound volume of the left and right channel speakers. Clockwise rotation reduces the volume from the left speaker, counterclockwise rotation reduces the volume from the right speaker.

## TREBLE CONTROL

Modifies the high-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

## BASS CONTROL

Modifies the low-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

## INPUT FUNCTION SELECTOR

Press the button to select the desired input function: VCR 1, VCR 2, VDP, TAPE 1, TV/Aux, Tuner, CD or Phono. Select the VCR 2 on the rear panel or on the front panel with the VCR 2 selector button.

## VCR 2/CAMCORDER

### INPUT JACKS

#### VIDEO IN:

Connect to the VIDEO OUTPUT jack of a VCR (yellow jack).

## DISASSEMBLY PROCEDURES

### MODEL NO. : AVR-25

NOTE : The item numbers given in the following procedures refer to the exploded view and parts list.

#### ① Cover top removal

1. Remove 6 screws (S2) from the sides of chassis.
2. Remove 2 screws (S1) from the chassis back (item #56).
3. Carefully lift the cover top to remove.

#### ② Cover bottom removal

1. Remove 9 screws (S3) from the chassis.
2. Carefully lift the cover bottom (item #56) to remove.

#### ③ Panel-Front Assembly removal

1. Remove the cover top.
2. Remove 4 screws (S3) from the chassis front (item #36).
3. Remove 4 screws (S5) from both side of the chassis front (item #36).
4. Remove the flat cable from wafer (CP502) on the volume PC Board.
5. Remove 1 screw (S5) from the chassis right (item #32) for remove the lug wire.
6. Remove the flat cable from wafer (CP802) on the Dolby PC Board.
7. Disconnect CP401 and CP581 from the Dolby PC Board.
8. Remove the flat cable from wafer (CNTP803) on the tuner PC Board.
9. Disconnect CP291 from the tuner PC Board.
10. Disconnect CP402 from the main PC Board.
11. Disconnect CP801 from the power supply PC Board.

#### ④ Volume PC Board removal

1. Remove the panel front assembly.
2. Pull out the main volume knob with LED PC Board.
3. Remove the hex nut from the volume-motor to remove the volume PC Board.
4. Remove 2 screws (S1) from the panel front (item #2).
5. Pull the volume PC Board from the panel front assembly to remove.

#### ⑤ Headphone PC Board Removal

1. Remove the panel front assembly.
2. Remove 2 screws (S1) from the panel front (item #2) to release the headphone PC Board.

#### ⑥ Tone PC Board Removal

1. Remove the panel front assembly.
2. Pull the knobs (bass, treble, balance) out from the panel front assembly.
3. Remove the hex nut from the variable resistors (item #19 and #20).
4. Remove 4 screws (S1).

#### ⑦ Front PC Board Removal

1. Remove the panel front assembly.
2. Remove 11 screws (S1) holding the front PC Board to the panel front (item #2).

#### ⑧ Tuner PC Board Removal

1. Remove the cover top.
2. Remove the panel front assembly.
3. Disconnect CP103, CP601, CP101, CP104, CP704 and CP106 on the tuner PC Board.
4. Disconnect CP901 and CP902 on the tuner PC Board.
5. Remove 2 screws (S5) from the tuner PC Board.
6. Remove 8 screws (S9) from the chassis back (item #56).

#### ⑨ Dolby PC Board Removal

1. Remove the cover top.
2. Remove the panel front assembly.
3. Unjoin 2 fastener (item #37) for remove the Dolby PC Board.
4. Remove the flat cable CN501 on the Dolby PC Board.
5. Disconnect CP601 from the Dolby PC Board.

#### ⑩ Surround PC Board Removal

1. Remove the cover top.
2. Remove the cover bottom.
3. Remove the panel front assembly.
4. Remove the Dolby PC Board.
5. Disconnect CP602 from the power supply PC Board.
6. Remove 1 screw (S5) from the bottom of Chassis front (item #36).
7. Remove 6 screws (S1) from the chassis front (item #36).
8. Remove the chassis front.
9. Remove 2 screws (S5) from the heatsink (item #38).

**[11] Chassis back Removal**

1. Remove the cover top.
2. Remove the cover bottom
3. Do steps [8], [9] and [10].
4. Unsolder the solder pins to remove the power cord (item #59).
5. Remove 1 screw (S1) from the bottom of chassis left (item #41) and Remove 4 screws (S1) from chassis back.
6. Remove 19 screws (S9) and 2 screws (S10: PHONO and MONITORS) holding the chassis back.

**[12] Main PC Board Removal**

1. Remove the cover top.
2. Remove the cover bottom.
3. Remove the panel front assembly.
4. Remove the chassis back.
5. Unsolder all leads of Q262L/R, Q263L/R, Q270L/R, Q262C, Q263C, Q270C and IC241 from copper track on the main PC Board.
6. Disconnect CP101 from the power supply PC Board.
7. Disconnect CP241 from the power transformer.
8. Remove 2 screws (S5) from the main PC

Board.

**[13] Power Supply PC Board Removal**

1. Remove the cover top.
2. Disconnect CP801 from front P.C. Board
3. Disconnect CP602 from the surround P.C. Board.
4. Disconnect CP101 from the power supply P.C. Board.
5. Disconnect CN704 from the tuner P.C. Board.
6. Disconnect CP701, CP702 and CP703 from the transformer.
7. Unsolder 2 leads of the AC-cord (item #59). from neutral and live on the power supply PC Board.
8. Remove 2 screws (S5) from the power supply PC Board.
9. Remove 2 screws (S9) from the chassis back.

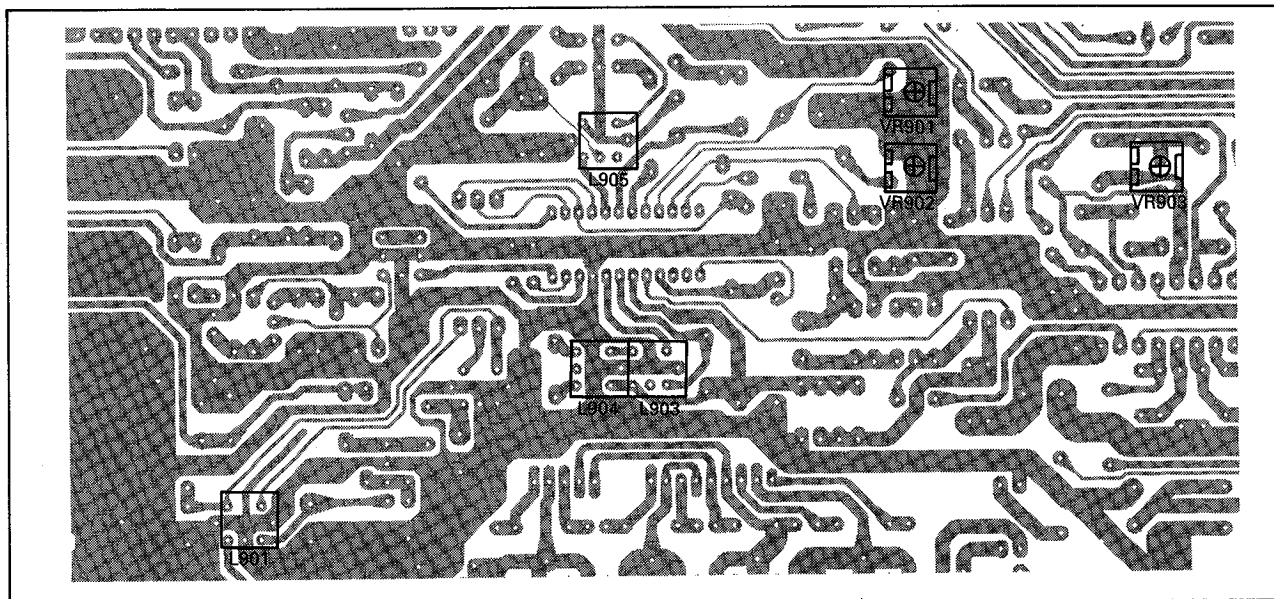
## ALIGNMENT PROCEDURES

### Equipment Required

- AM signal generator
- Oscilloscope
- AC voltmeter
- FM signal generator
- Stereo modulator
- Audio generator
- Distortion meter
- DC voltmeter

**Note:** Remove line cord antenna from FM external antenna terminal when aligning.

### Alignment and Test Points (Tuner P.C. Board)



### AM IF and RF Alignment

#### Preparation

1. Output of signal generator should not be higher than necessary to obtain an optimum output reading.
2. Signal generator modulation: 30%.
3. Switch: Press to AM.

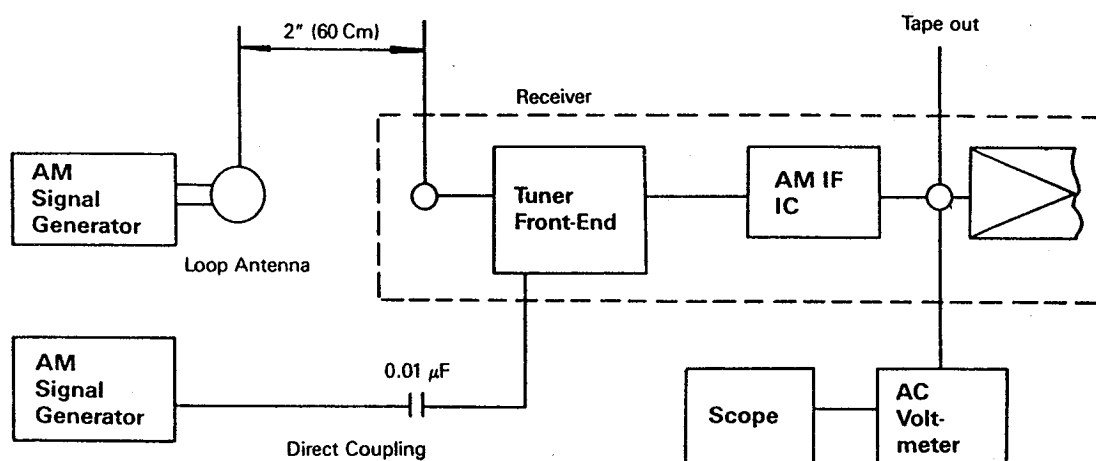
Step	Signal Generator Frequency	Receiver Frequency on the Display	Equipment Connection	Adjustment Point	Adjust for
1	450 kHz (400 Hz, Mod.)	Place at non-interference spot around 600 kHz	AC voltmeter to TAPE OUT jack.	L905 (IFT)	Maximum reading
2	600 kHz (400 Hz, Mod.)	600 kHz	Same as step 1.	L901 (ANT Coil)	Same as step 1
3	1400 kHz (400 Hz, Mod.)	1400 kHz	Same as step 1.	TC901 (ANT Trimmer)	Same as step 1
4	1000 kHz (400 Hz, Mod.)	1000 kHz	FL display TUNED indicator	VR901	Indication on receiver with output of 500 $\mu$ V/m

## FM IF Alignment

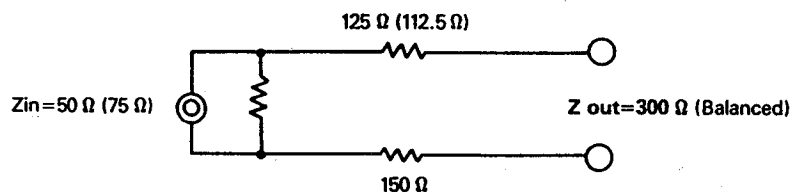
### Preparation

1. Signal Generator output should be no higher than necessary to obtain an optimum output reading.
2. Switch: Press to FM.
3. Signal generator deviation : 75 kHz.
4. Be sure to disconnect FM line cord antenna during alignment.

Step	Signal Generator Frequency	Receiver Frequency Display	Equipment Connection	Adjustment Point	Adjust for
1	98.1 MHz (1 kHz, Mod.)	98.1 MHz	Distortion meter to TAPE OUT jack	L904	Minimum distortion
2	98.1 MHz (1 kHz, Mod.)	98.1 MHz	Same as step 1.	VR902	Zero reading on AC voltmeter with SSG output level of 6 $\mu$ V



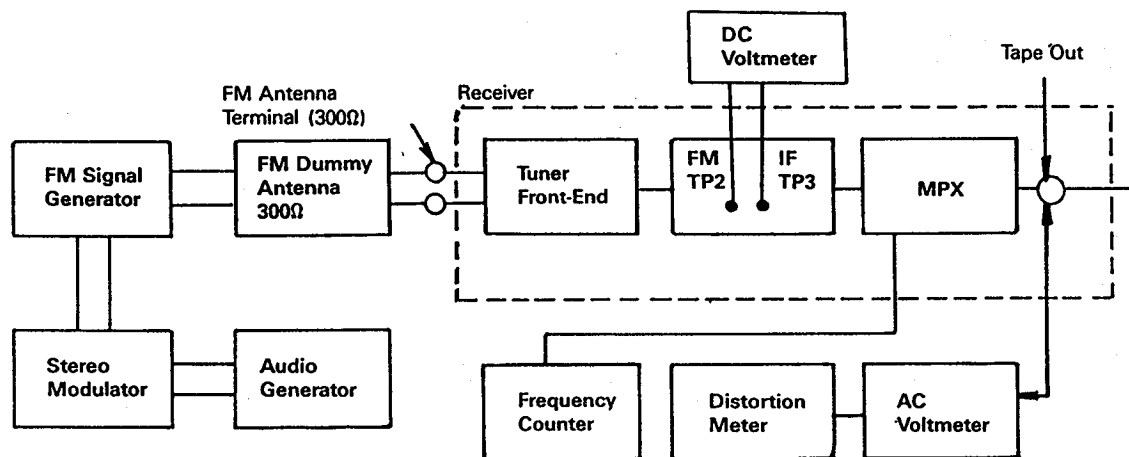
### AM Alignment Connection



FM dummy antenna to 300  $\Omega$  antenna terminal of receiver

### FM Dummy Antenna

## MPX Alignment



FM RF/IF and MPX Alignment Connection

### Preparation

1. Switch: press to FM.
2. Tune for 98 MHz on band.
3. Signal generator output level: 1000  $\mu$ V.
4. Deviation: 75 kHz, at 100 % modulation of composite signal.
5. Connect signal generator to FM antenna terminal through FM dummy antenna (300  $\Omega$ ).

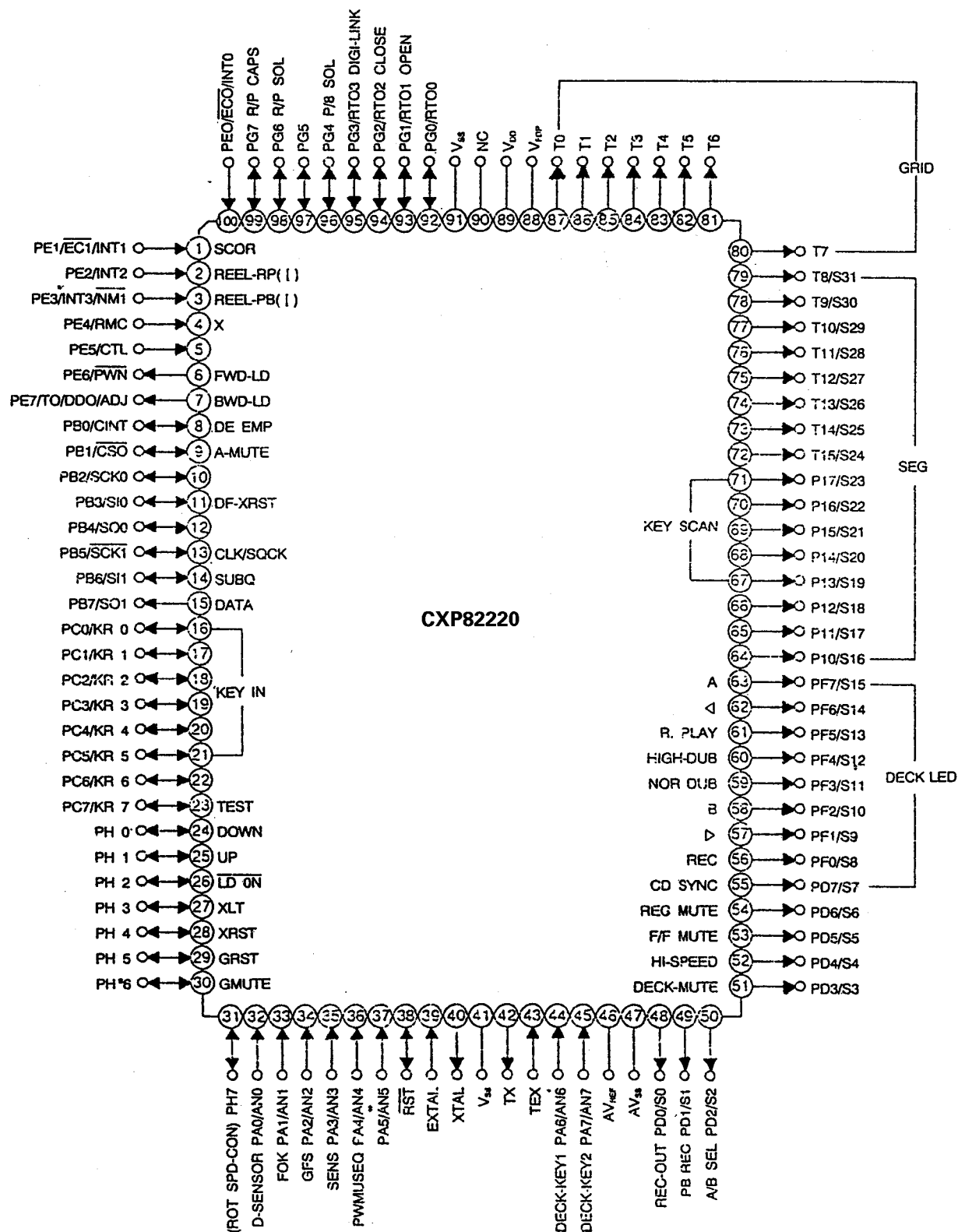
Step	19 kHz Modulation Level	Signal Generator Frequency Setting	Output Indicator Connection	Adjust	Adjust for
1	8 % mod.	Composite to channel 1kHz R	AC voltmeter to TAPE OUT jack of R channel	—	Adjust for about 450 mV of audio output
2	8 % mod.	Composite to channel 1kHz L	AC voltmeter to TAPE OUT jack of R channel	VR903	AC voltmeter reading should be at least 33 dB below
3	8 % mod.	Composite to channel 1kHz R	AC voltmeter to TAPE OUT jack of L channel	VR903	Same as step 2.
If you could not obtain -35 dB readings in steps 2 and 3 (compared with step 1), readjust VR903 until you obtain -33 dB readings for both steps 2 and 3. Nominal is -43 dB.					



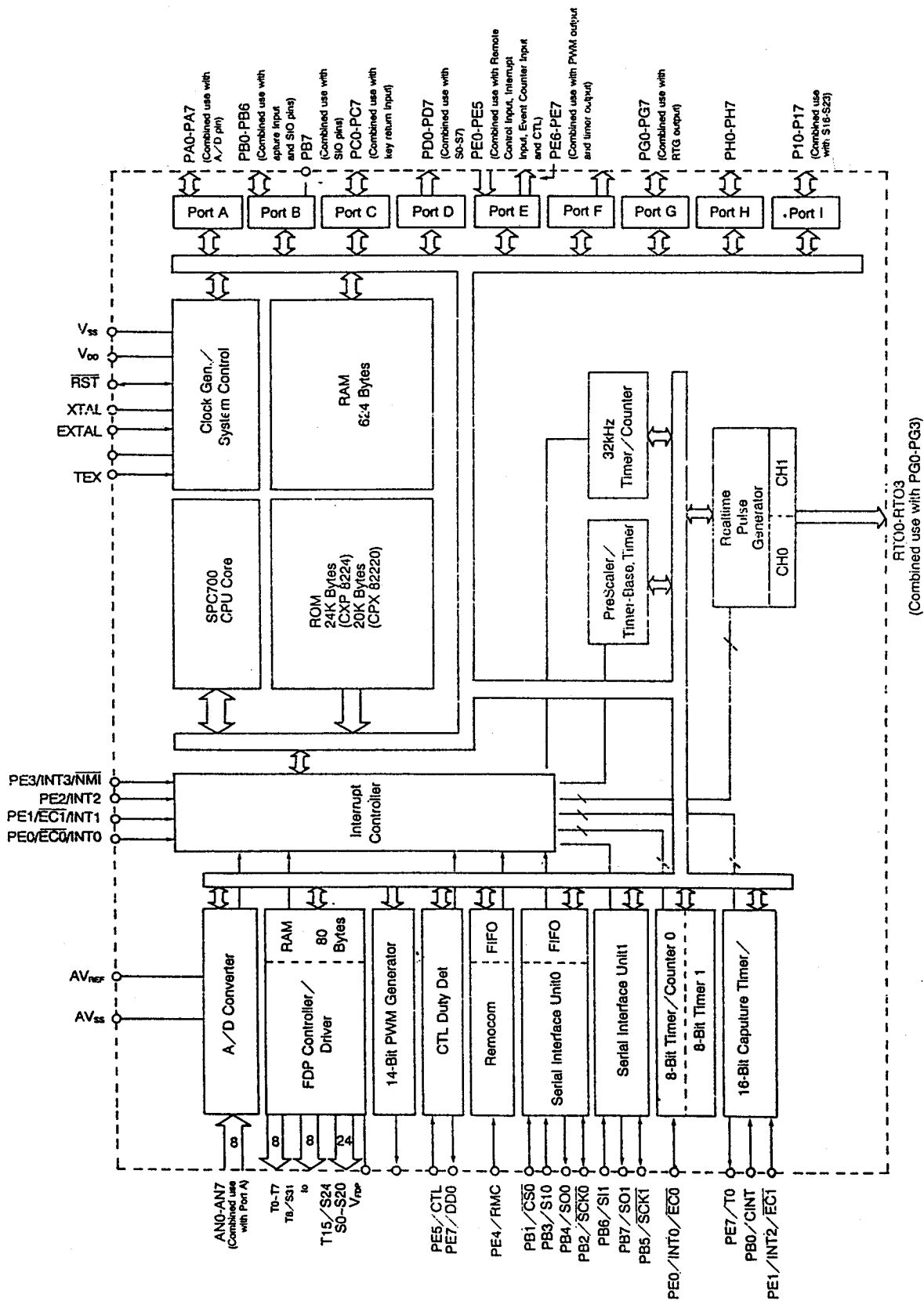
## CIRCUIT DESCRIPTION

## CPU (IC801) : CXP82220 -107Q (8 bit SINGLE-CHIP MICROCOMPUTER)

## 1. Pin Connection Diagram



## 2. Block Diagram



## 3. Pin Functions

Symbol	Input/Output		Functions
PA0/AN0 to PA7/AN7	I/O/Analog Input	(Port A) 8-bit I/O port. Each bit can be individually specified as input or output. (8 pins)	A/D converter analog input pins.
PB0/CINT	I/O/Input	(Port B) 8-bit I/O port. The low 7 bits can be individually specified as input or output. The most significant bit (PB7) is output only. (8 pins)	16-bit timer/counter external capture input pin
PB1/ $\overline{\text{CSO}}$	I/O/Input		Serial interface(CH0) chip select input pin.
PB2/ $\overline{\text{SCKO}}$	I/O/I/O		Serial data (CH0) I/O pin.
PB3/S10	I/O/Input		Serial data (CH0) input pin.
PB4/SO0	I/O/Output		Serial data (CH0) output pin.
PB5/ $\overline{\text{SCK1}}$	I/O/I/O		Serial clock (CH1) I/O pin.
PB6/SI1	I/O/Input		Serial data (CH1) input pin.
PB7/SO1	Output/Output		Serial data (CH1) output pin.
PC0/KR0 ~ PC7/KR7	I/O/Input	(port C) 8-bit I/O port. Each bit can be individually specified as input or output. Each can drive a 12 mA sink current. (8 pins)	Key return input pins for performing key scans with the FDP segment signals.
PD0/S0 ~ PD7/S7	Output/Output	(Port D) 8-bit output port. (8 pins)	FDP segment signal output pins.
PE0/INT0/ $\overline{\text{EC0}}$	Input/Input/Input	(Port E) 8-bit input/output port. The low 6 bits are inputs, and the high 2 bits are outputs. (8 pins)	External interrupt request input pins.
PE0/INT0/ $\overline{\text{EC1}}$	Input/Input/Input		(4 pins)
PE2/INT2	Input/Input		
PE3/INT3/ $\overline{\text{NMI}}$	Input/Input/Input		Non-maskable interrupt request input pin.
PE4/RMC	Input/Input		
PE5/CTL	Input/Input		Remote control unit receive circuit input pin.
PE6/PWM	Output/Output		14-bit PWM output pin.
PE7/TO/DD0/ADJ	Output/Output Output/Output		16-bit timer/counter square wave output pin. CTL duty detection output pin, and pin for frequency division output of 32 kHz oscillator
PF0/S8 ~ PF7/S15	Output/Output	(Port F) 8-bit output port. (8 pins)	FDP segment signal output pins.

Symbol	Input/Output	Functions	
PG0/PT0 o ~ PG3/RT 03	I/O/Output	(Port G) 8-bit I/O port. Each bit can be individually specified as input or output. The lower four bits are output logically ORed with the RTO contents. (8 pins)	Realtime pulse generator (RTG) outputs. These function as high-precision realtime pulse output ports. (4 pins)
PG4 ~ PG7	I/O		
PH0 ~ PH7	I/O	(Port H) 8-bit I/O port. Each bit can be individually specified as input or output. (8 pins)	
P10/S16 ~ P17/S23	Output/Output	(Port1) 8-bit output port. (8 pins)	FDP segment signal output pins.
T8/S31 ~ T15/S24	Output/Output	Dual-use output pins for FDP timing signals and FDP segment signals.	
T0 ~ T7	Output	FDP timing signal output pins	
V <sub>FDP</sub>		FDP voltage supply pin if an internal resistor was specified with a mask option.	
EXTAL	Input	Crystal interface pins for system clock oscillation. If the clock is supplied externally then it should be input to the EXTAL pin. The XTAL pin should then be left open	
XTAL	Output		
TEX	Input	Crystal interface pins for the 32 kHz timer/counter's oscillator. A 32-kHz liquid crystal oscillator is placed between TEX and TX. When used as an event input, connect the signal source to TEX, and leave TX open.	
TX			
RST	I/O	System reset pin, active when "L"	
NC		This pin should be connected to V <sub>DD</sub> during operation.	
AV <sub>REF</sub>	Input	A/D converter reference voltage input pin.	
AV <sub>SS</sub>		A/D converter ground pin.	
V <sub>DD</sub>		Positive power supply pin.	
V <sub>SS</sub>		GND pin.	

## CONTROL KEY AND MODE SWITCH MATRIX

### SEARCHING FOR STATION

#### Automatic Tuning

Press the AUTO SEARCH key for automatic tuning.

Pressing the TUNE  $\Delta$  or TUNE  $\nabla$  key causes automatic up or down searching for a station until a station is received.

#### Manual Tuning

By pressing the TUNE  $\Delta$  or TUNE  $\nabla$  key, the frequency is changed by a step. If the key is kept pressing scanning is continued until the key is released.

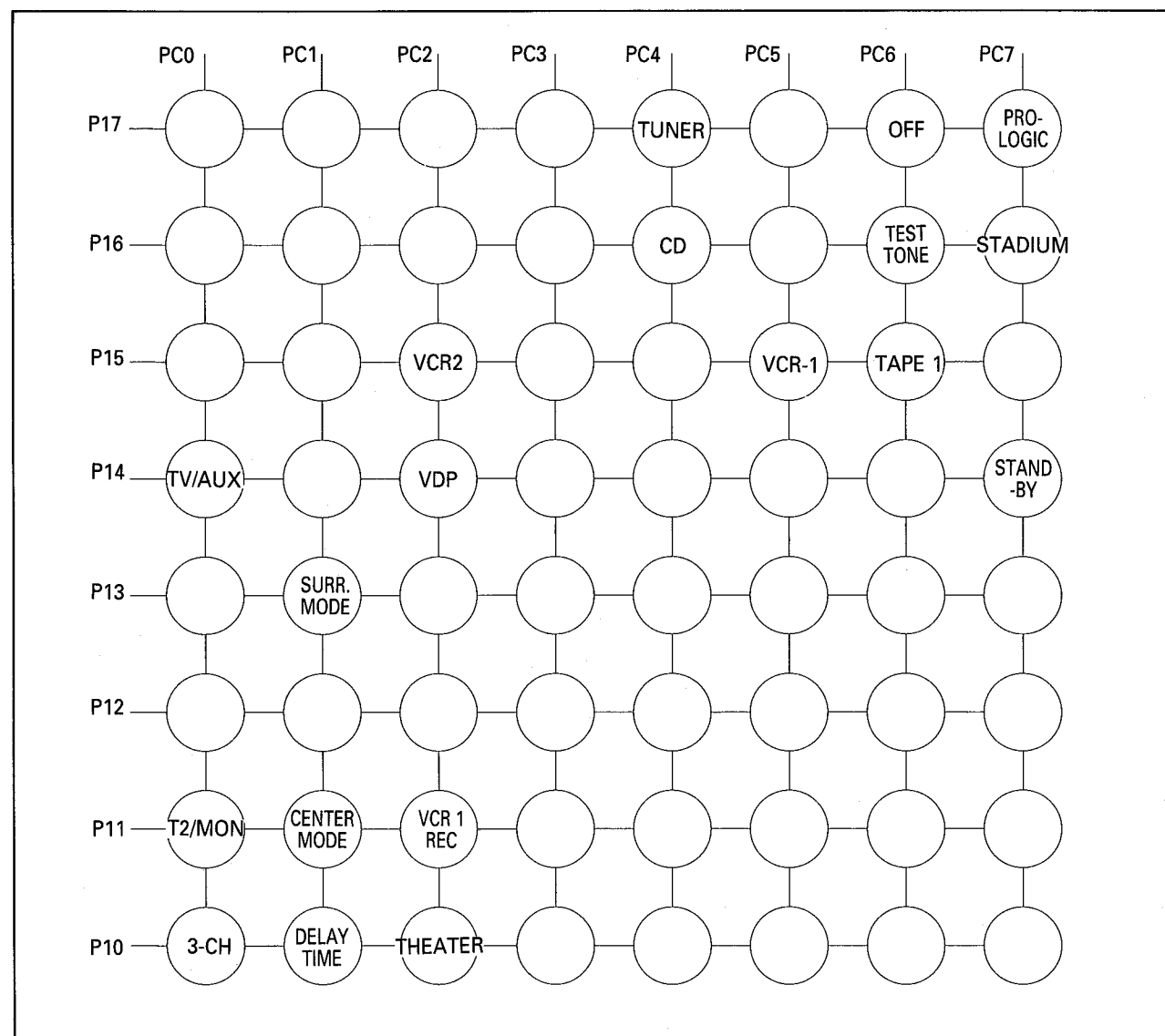
#### Memory

The tuning information is stored into an internal RAM by pressing the MEMORY key and the pressing one of 30 preset locations while the memory indicator 'MEMORY' blinks.

If no key is pressed while the indicator blinks, the memory function is canceled.

#### M1 to M10

Thirty AM and FM stations can be recalled from internal RAM. When It is switched from one band to the other band, the tuner tunes to the station last tuned on that band. Each time a station is changed, the controller provides a signal to mute the tuner.

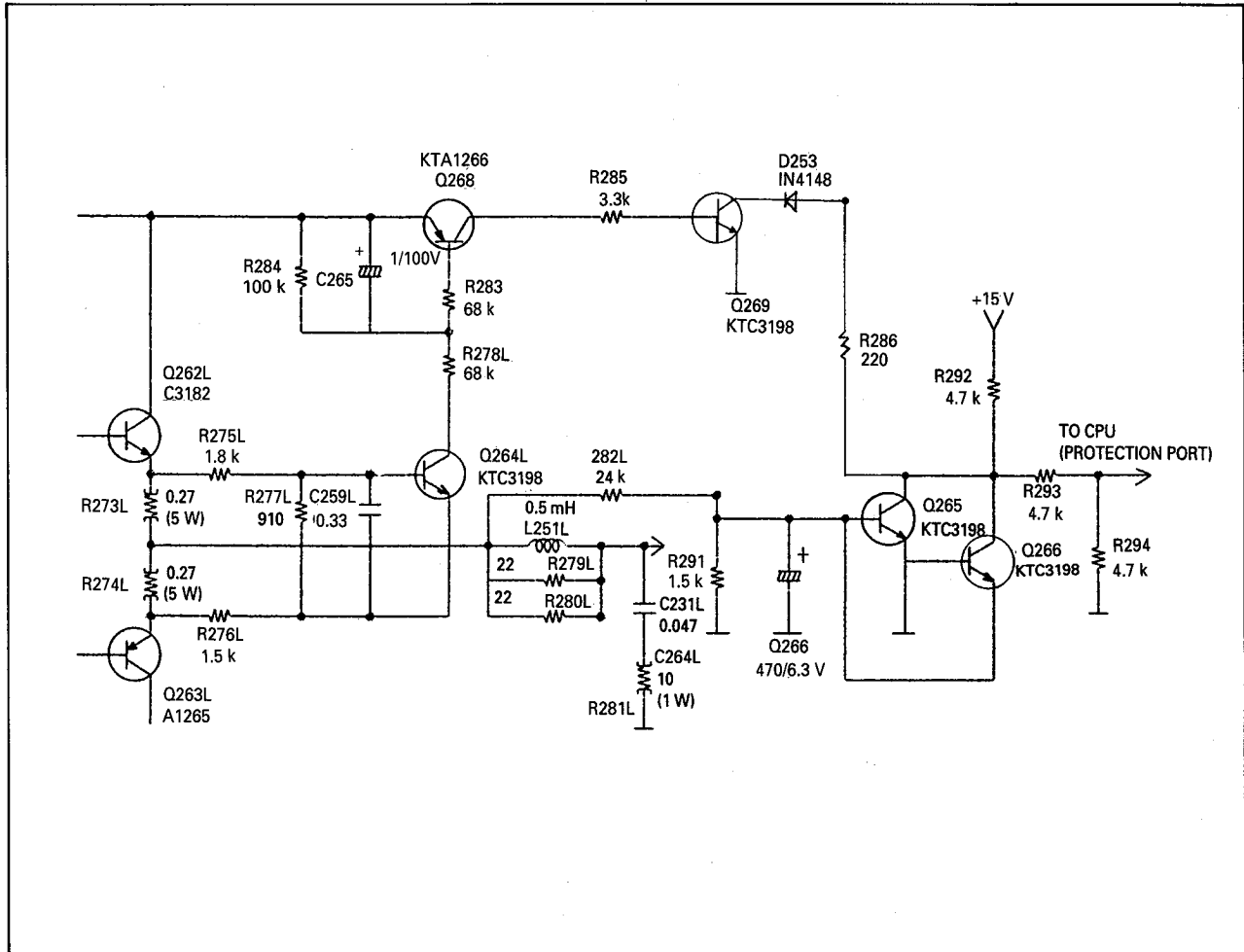


## PROTECTION CIRCUITS

### SPEAKER PROTECTION CIRCUITS

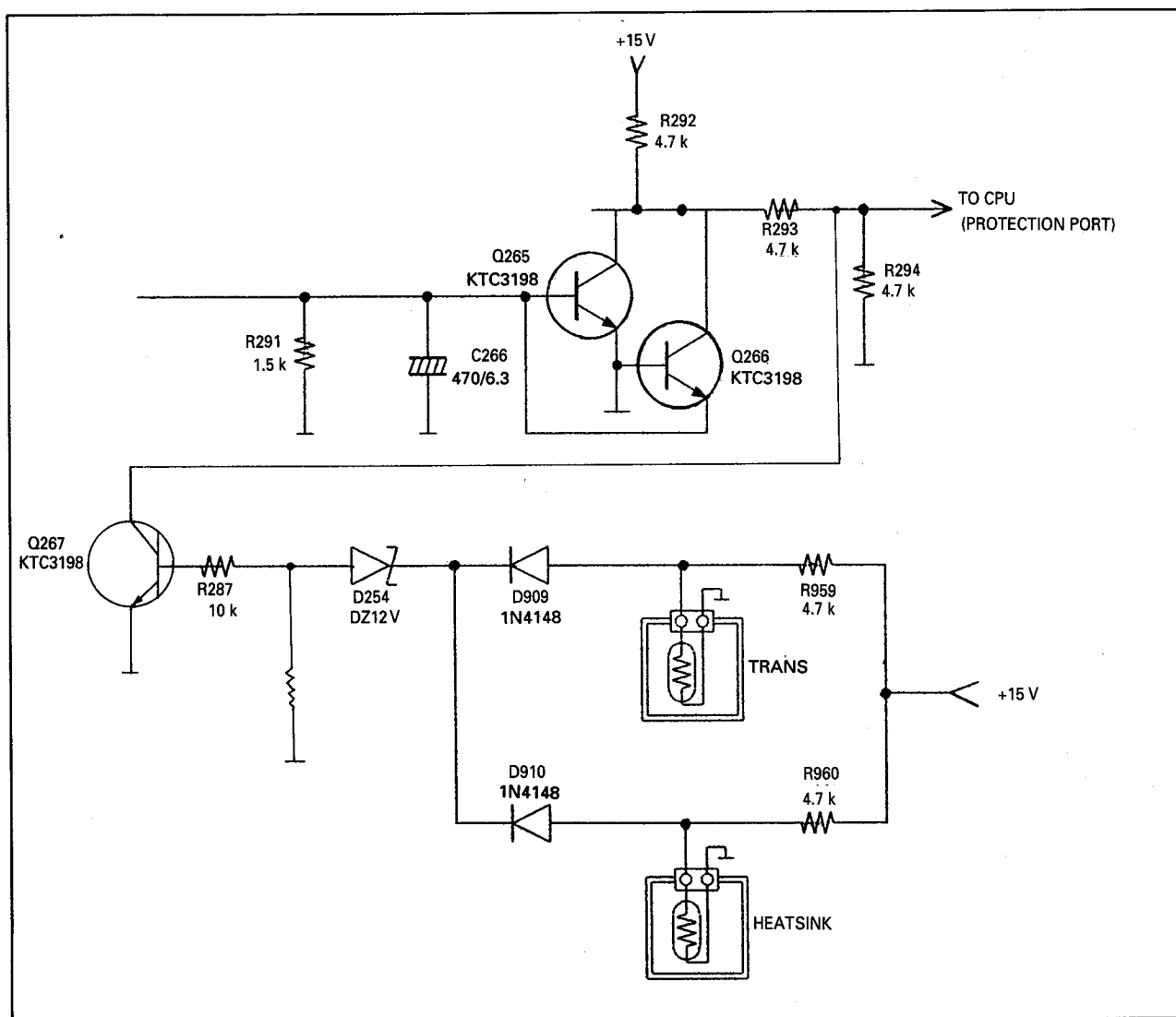
The CPU protects both this unit and the speakers when an abnormally high current flows in Q262 L/R/C and Q263 L/R/C due to excessive input drive, too low of a load impedance, or short of the speaker terminals. If current increase is excessive the voltage across R273 L/R/C or R274 L/R/C turns on Q264 L/R/C, then Q268 turns on Q269.

It makes the protection port of the CPU to low state, and the CPU turns unit to standby state.

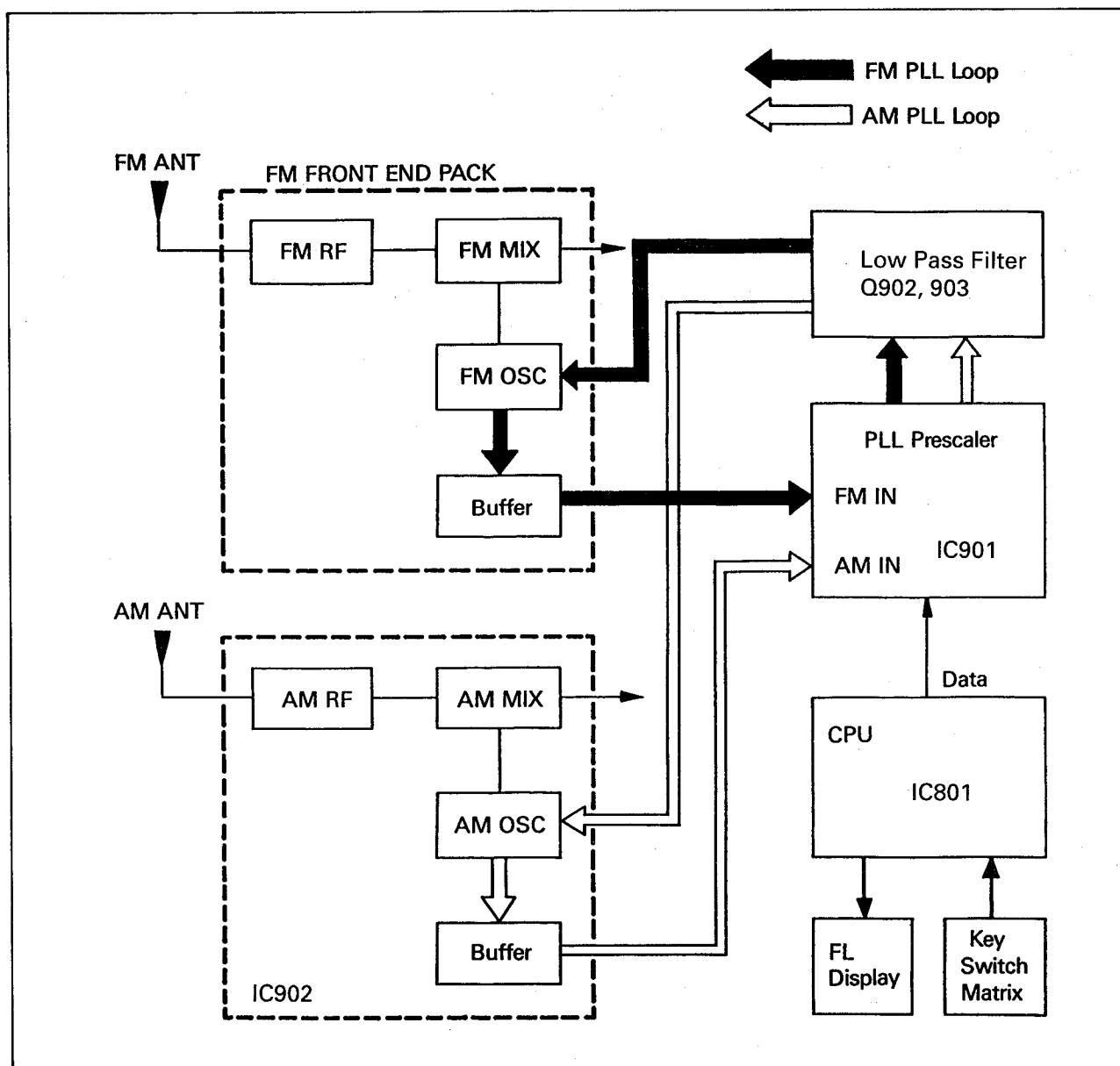


### THERMAL PROTECTION CIRCUITS

This unit has a overload thermal protection circuits to guard against abnormal operation. When the temperature of TRANS POSISTOR installed with the main transformer or H/SINK POSISTOR rises abnormally, the resistance of the posistor becomes larger and Q267 is turned on. It makes the protection port of the CPU to Low state, and the CPU turns unit to standby state.



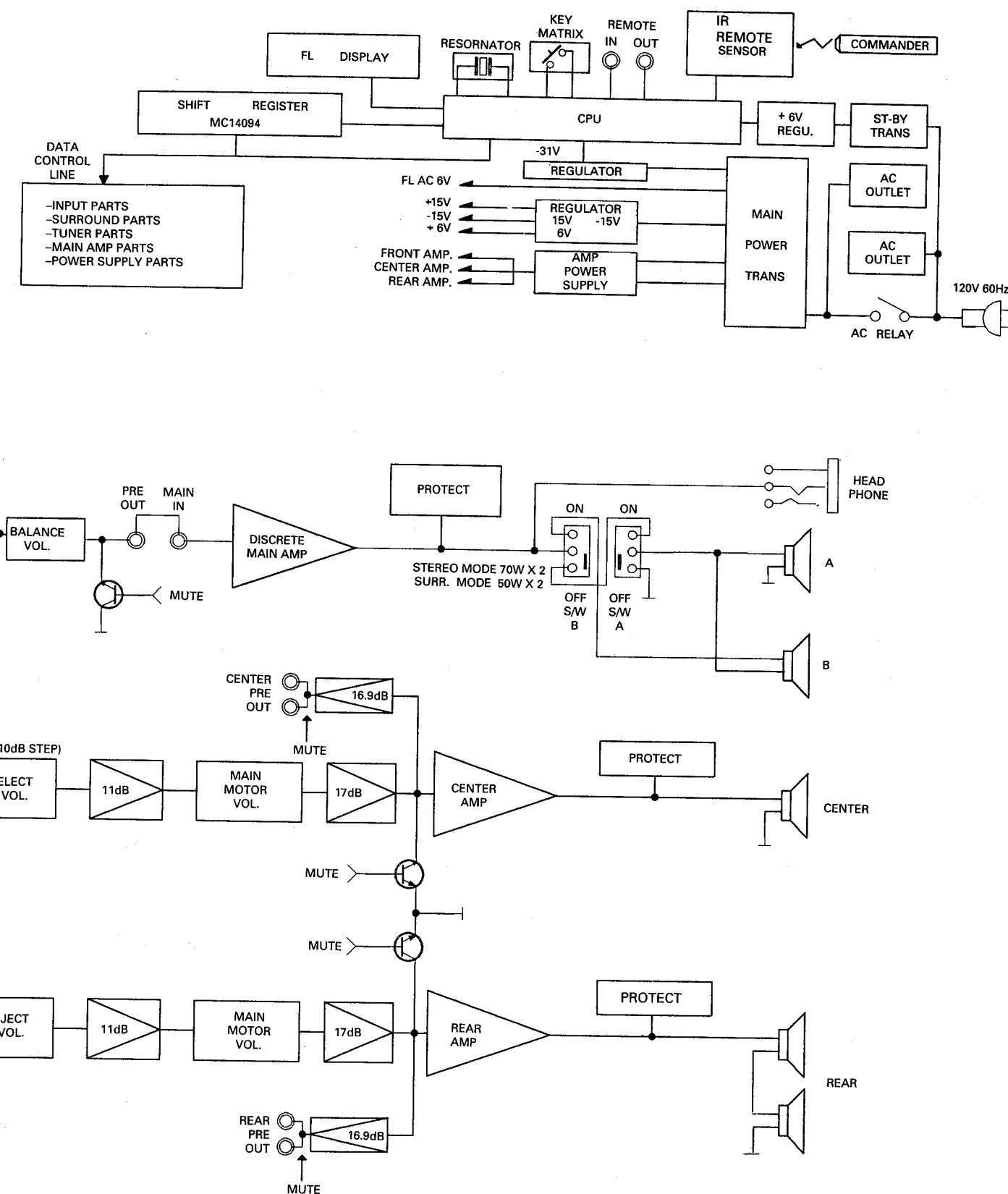
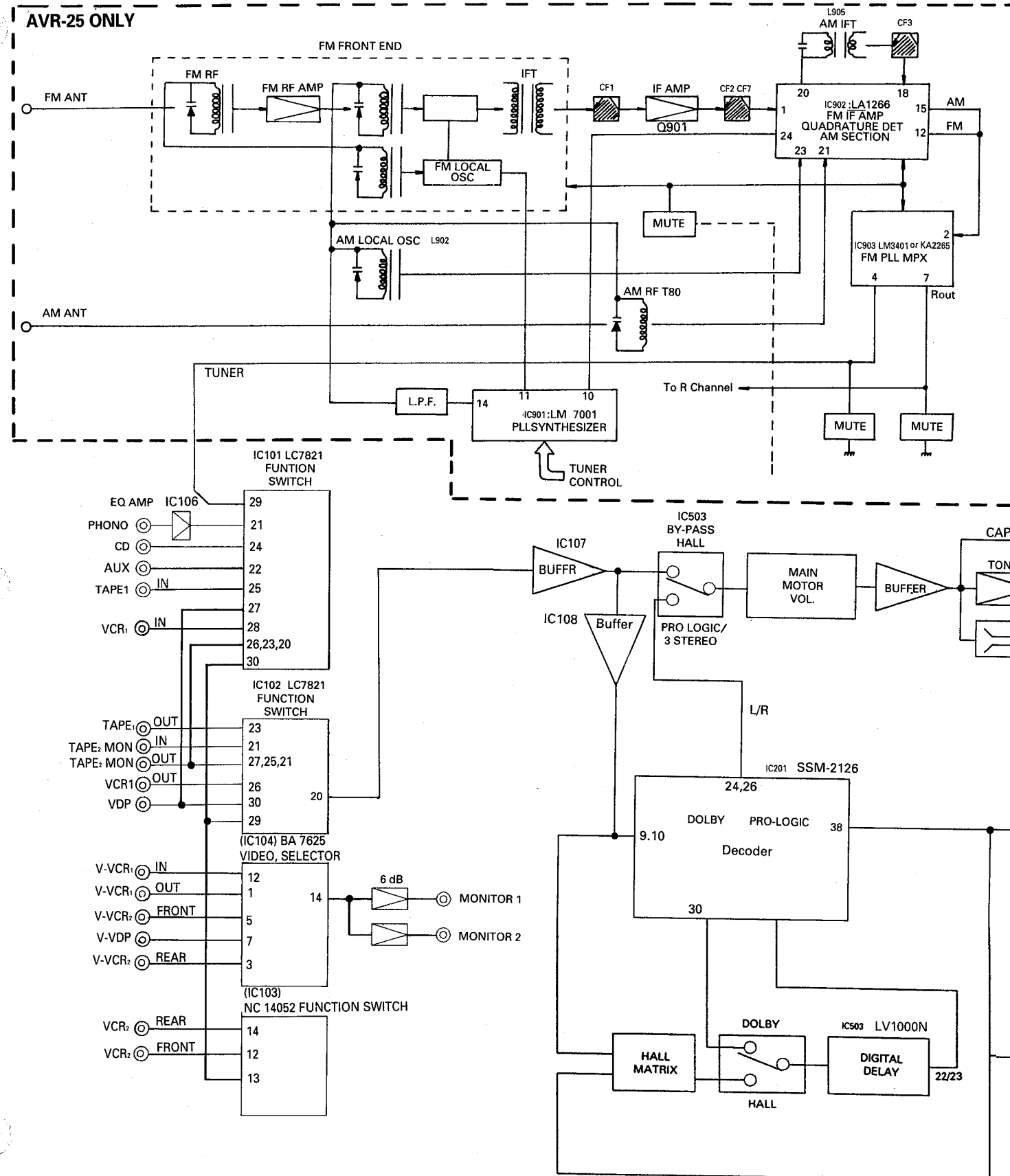
## DIGITAL TUNING SYSTEM DESCRIPTION



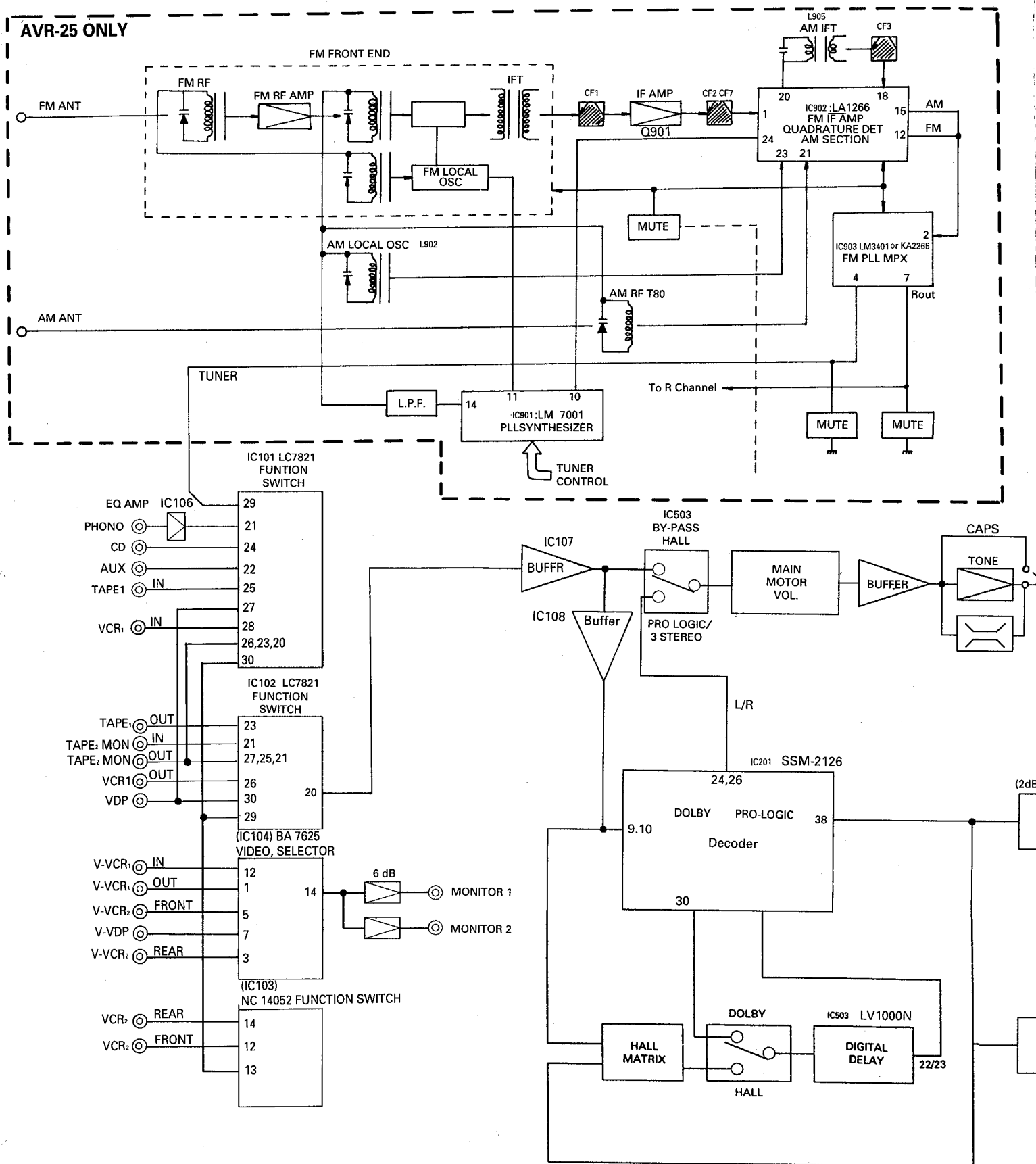


# BLOCK DIAGRAM

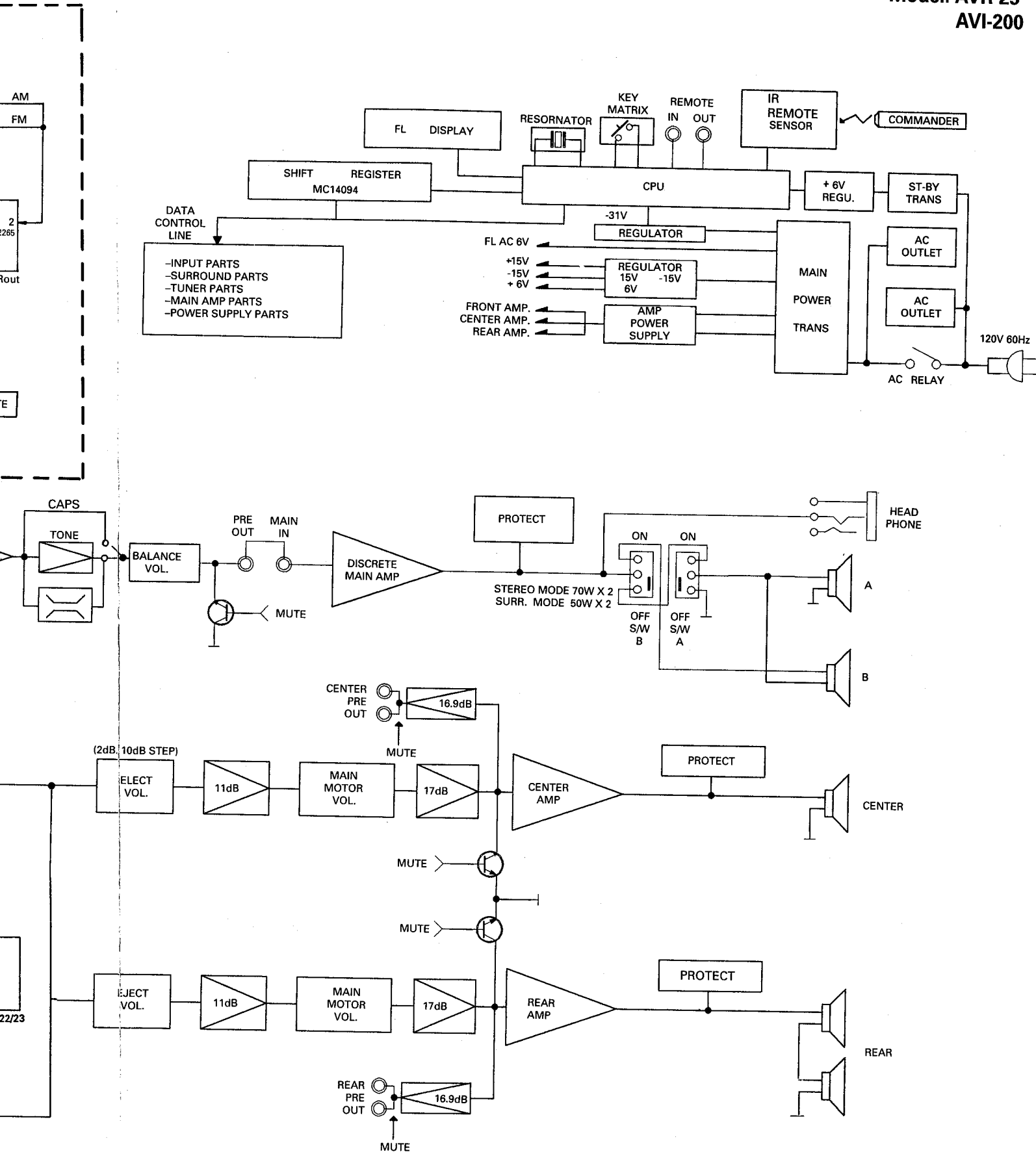
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AVI-200



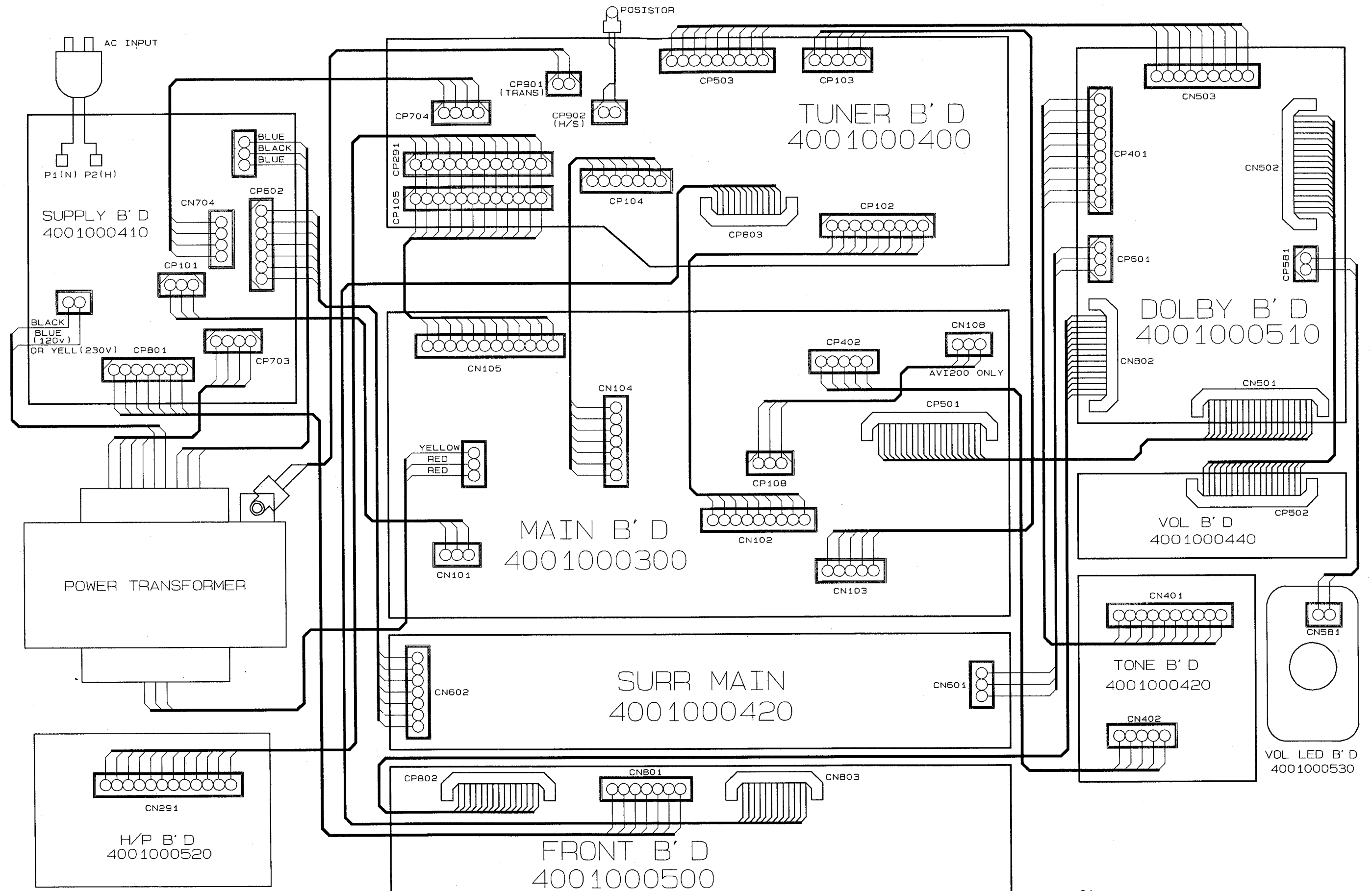
## BLOCK DIAGRAM



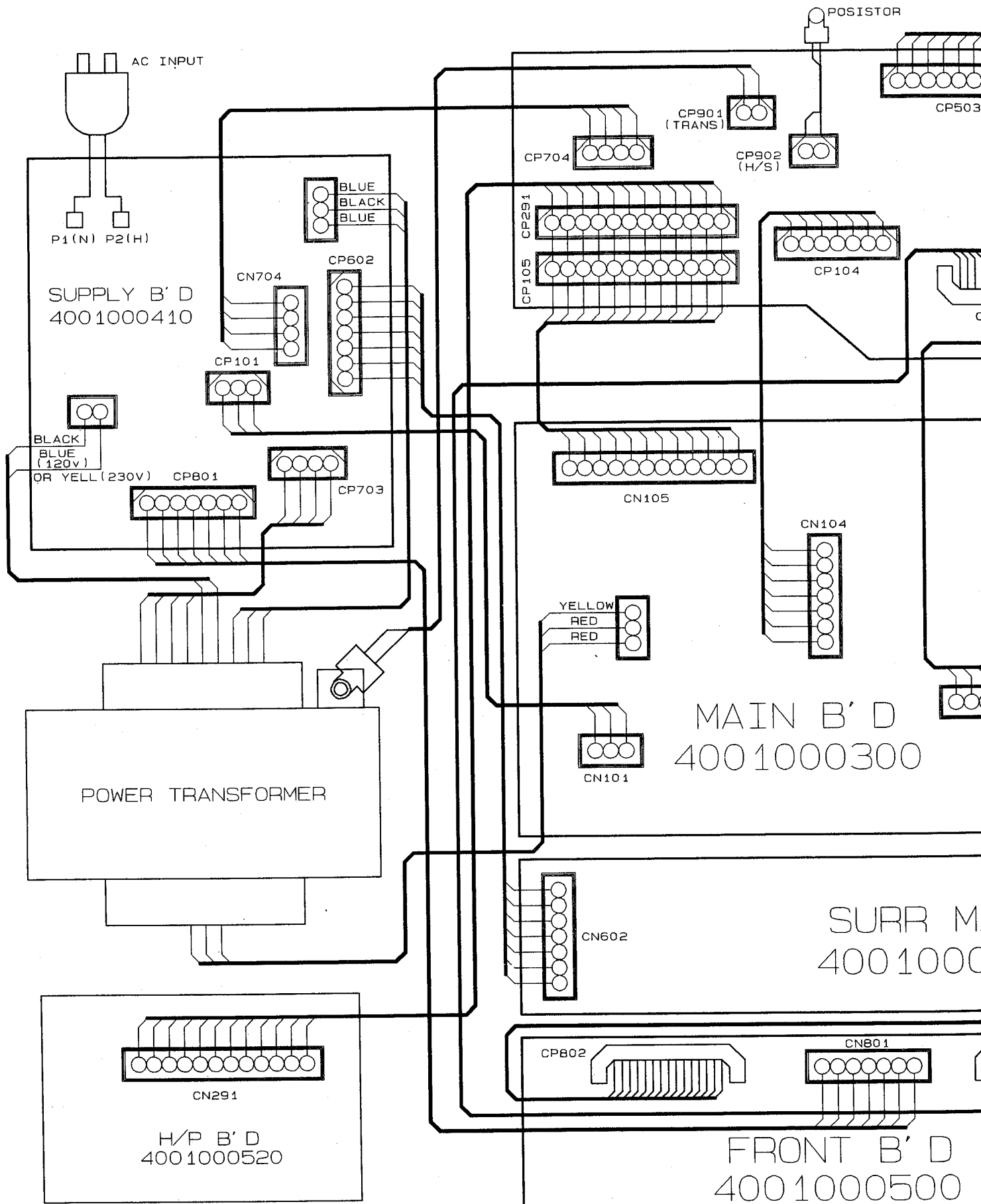
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AVI-200

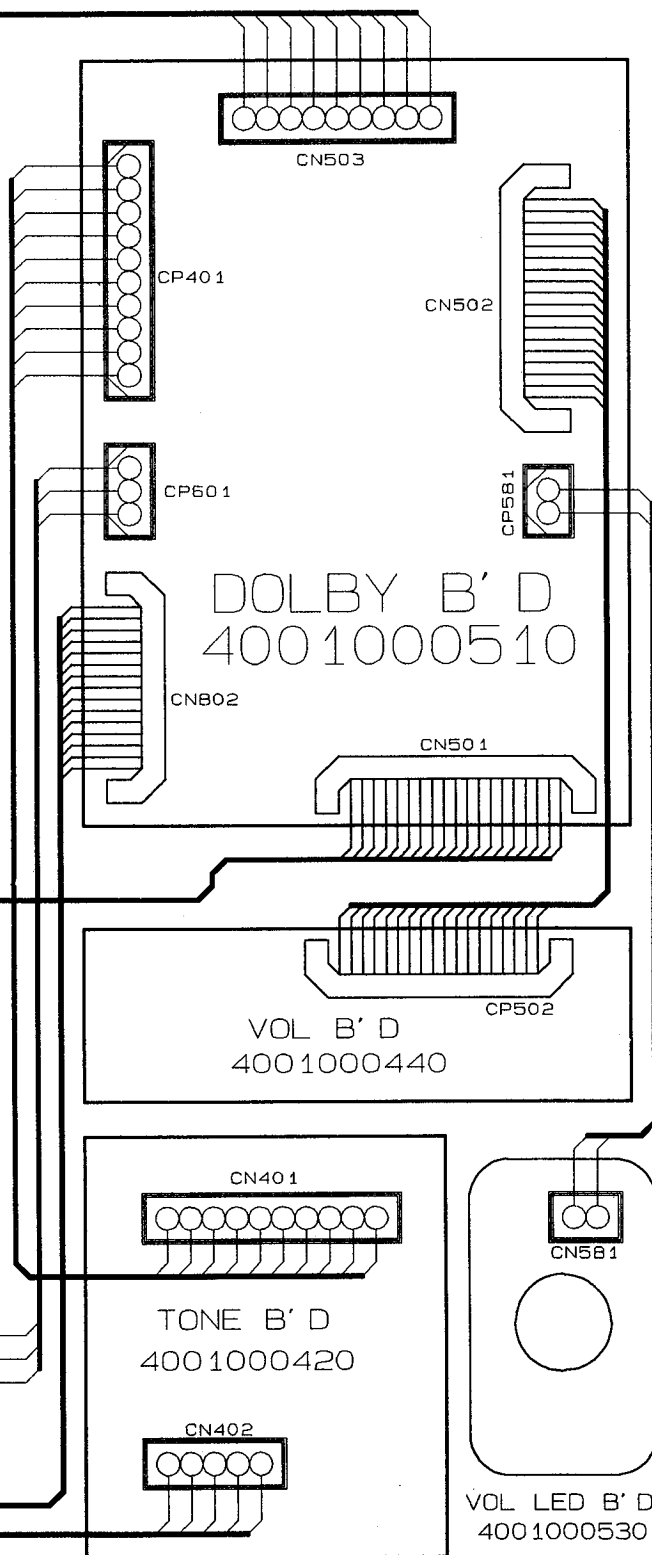
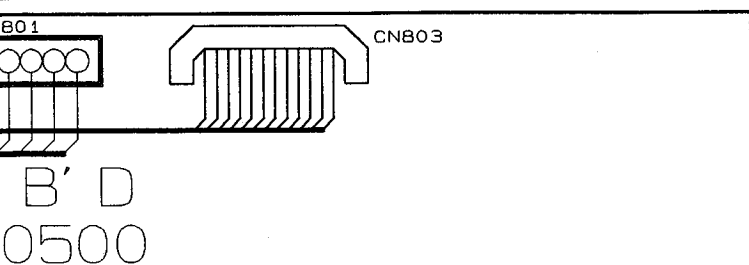
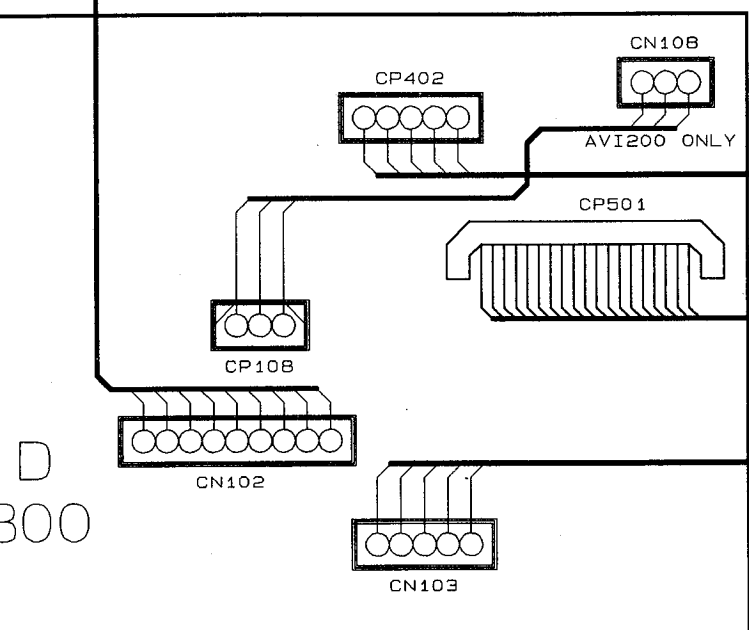


## WIRING DIAGRAM



## WIRING DIAGRAM





## TROUBLESHOOTING

Symptom	Cause and Remedy
Receiver inoperative (FL indicator does not light)	A) Faulty AC power cord. Replace. B) Defect the power switch. Replace. C) Broken wire in the power transformer. Replace the power transformer. D) Blown power Replace the fuse.
Fuse blows when power is turned on.	A) Defective power transformer. Replace. B) Short the primary or secondary of the transformer circuitry. Repair the short. C) Damaged rectifier (D241 to D244) or damaged trans (Q262 and Q263). Replace the defective component(s). D) Short circuit in the amplifier circuit. Repair the short.
Power indicator lights but no sound from both channels	A) Speaker switch 1 or 2 defective. Replace the defective switch (es). B) Defect in transistor Q262L/R, Q263L/R on the Main Amp Board. Replace the defective component(s).
Speaker A inoperative	A) Speaker switch A defective. Replace
Speaker B inoperative	A) Speaker switch B defective. Replace.
Speaker works normally but headphones inoperative	A) Defective resistor R295L/R Replace.
PHONO input inoperative	A) Poor contact in phono input jack. Repair or replace the jack. B) Defective phono switch or IC106. Replace.
LOUDNESS has no effect	A) Defective loudness switch. Replace. B) Defective resistor R301L/R, C301L/R and C302L/R Replace the defective component(s).
FM inoperative	A) Defective front-end. (FE-901) Replace. B) Defective FM switch. Replace the switch

Symptom	Cause and Remedy
FM inoperative	C) Defective transistor Q901, Q904, Q905, IC901, IC902, IC903 Replace the defective transistor(s) or IC(s). D) Defective coil L903 or L904. Replace the coil(s). E) Defective lead-in. Repair or replace the lead-in. F) Ceramic filter CF901, CF902 defective. Replace the defective ceramic filter(s). G) Defective controller circuit component. Replace.
Poor multiplex separation	A) Improper adjustment. Readjust VR803. (Refer to MPX Alignment.) B) IC903 defective. Replace. C) Variable resistor VR803 defective. Replace the variable resistor.
STEREO indicator does not light	A) Defective indicator in FL. Replace. B) Improper adjustment of VR903 of tuner board. Make readjustment. C) Defective IC903 Replace the defective component.
FM volume not sufficient	A) If volume from both L and R channels is not loud enough : Front end Section defective. Faulty IC902, Coil L903 Defective C907 of tuner Board. If sound of one channel is not loud enough: Defective L906 L/R.
FM Mono has no effect	A) Defective FM MODE switch. Replace.
AM inoperative	A) Damaged IC902 of tuner board. Replace. B) Defective L901, L902, L905 or CF3 of tuner board. Replace the defective component(s). C) Resistor R915, R926 defective. Replace the defective component(s). D) Capacitor C906, C922, C926 defective. Replace the defective capacitor(s). E) Defective AM switch Replace. F) Defective varicap diode VD901, VD902. Replace varicap diode(s). G) Damaged AM loop antenna. Repair or replace. H) Defective controller circuit component. Replace.
Bass control has no effect	A) Variable resistor BASS defective. Replace. B) Defective R416L/R, R417L/R, R418L/R, C414L/R, C415L/R Replace the defective component(s).



Symptom	Cause and Remedy
Treble control has no effect	A) Variable resistor TREBLE defective. B) Defective C417L/R, C418L/R, R419L/R, R420L/R Replace the defective components(s).
Auto tune inoperative (UP/DOWN)	A) Poor contact in Up/Down key. Repair replace. B) Defective IC801 Replace. C) Defective FL Display Replace. D) Defective tuner circuit component. Replace. E) In case of FM only, improper adjustment of FM front-end. Readjust.
Manual tune inoperative (UP/DOWN) (AM or FM)	A) Poor contact in Up/Down key. Replace. B) Defective IC801. Replace.
Memory setting (keys 1-10) inoperative	A) Poor contact in memory keys 1-10. Replace. B) Poor contact in memory set key. Replace. C) Defective IC801. Replace the defective component.
FL inoperative	A) FL defective. Replace. B) Defective IC801. Replace. C) Defective X-TAL 801. Replace.
Noise Volume control	A) Defective IC301. Replace. B) Defective capacitor C304 or C305 Replace the defective capacitor(s).
Remote Control Unit inoperative	A) Weak Battery. Replace. B) Defective. Replace. C) Defective IC801 or Sensor 801 (CPU Board) or IC01. Replace.

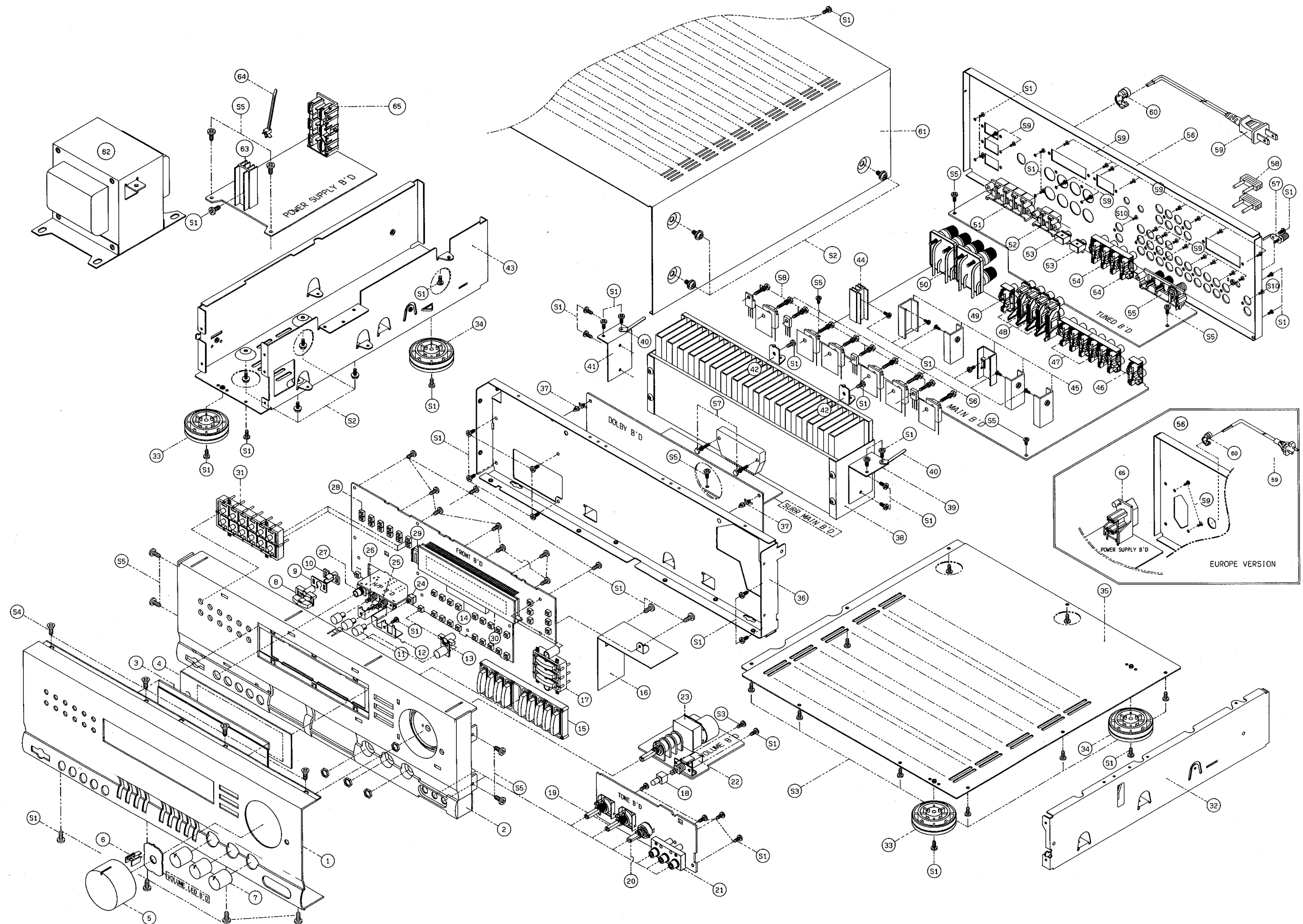
## GENERAL UNIT PARTS LIST

Ref. No.	Description	Mfr. Part No.	Version	Ref. No.	Description	Mfr. Part No.	Version
1	Panel Front, Aluminium, black	048602019311		51	Terminal Speaker, 4P	4408105410	
2	Body, Front, ABS, black	8521008910		52	Terminal Speaker, 2P	4408107010	
3	Window FL, Acryl, Dark Smoke	048553020111		53	Jack, Multiroom	4438006510	
4	Filter, FL, PVC, Red	048535042611		54	Jack, RCA, 4P	4438108610	
5	Knob, Volume, Aluminium, Black	048643006711		55	Terminal, Antenna	4408108210	Europe
6	Indicator, Volume, Acryl, Milk	8555049210			Terminal, Antenna	4408108310	USA/CA
7	Knob Rotary, ABS, Black	048545126311		56	Chassis Back, SECC (Europe)	046202041241	Europe
8	Button Power, ABS, black	048543061011			Chassis Back, SECC (UL/CSA)	046102041221	USA/CA
9	Light Shield, PVC, Black	8535042910		57	Ground Terminal	4408103720	
10	Indicator, Power, Acryl, Milk	8555048710		58	Plug, Mono	4328204210	
11	Button Speaker, ABS, black	048545124111		59	Cord, AC Power	4308002310	Europe
12	Bracket Shield, ET	6165148210			Cord, AC Power	4308001410	USA/CA
13	Button Source, ABS, black	048543060911		60	Stopper Cord	6518000111	Europe
14	Sponge, EVA, Black	6715020730			Stopper Cord	6518000710	USA/CA
15	Button Seesaw, ABS, black	048543060811		61	Cover Top, SECC, Black	046122022611	
16	Shield Fence, ET	6163114510		62	Power Transformer, 230 V, 50 Hz	2828001117	Europe
17	Button Tuning, ABS, black	048543059711			Power Transformer, 120 V, 60 Hz	2828009967	USA/CA
18	Button Loud, ABS, Black	048545124211		63	Heatsink (H:30), Regulator TR.	7505206210	
19	Volume Rotary (Bass/Treble)	3208049510		64	Tie locking	6528002810	
20	Volume Rotary (Balance)	3208052010		65	Outlet, 1P	4448103610	Europe
21	Jack, RCA, 3P	4438109710			Outlet, 3P	4448102910	USA/CA
22 (SW301)	Switch Push	4628059610		S1	Screw #2 BTC 3 X 8 B	8109230083	
23 (VR301)	Volume Motor	3228019410		S2	Screw WSAM 4 X 8 B	8159440083	
24 (SW801)	Switch Push	4628054410		S3	Screw #2 BTC 3 X 6 B	8109230063	
25 (SW291)	Switch Push	4628043810		S4	Screw #2 FTC 3 X 8 B	8129230083	
26 (SW292)	Switch Push	4628049210		S5	Screw #2 WPTC 3 X 8 Y	8159230081	
27	Jack, Phone	4438005010		S6	HEX MSPW 3 X 12 Y	8099130121	
28	Switch Tact	4658003710		S7	HEX MSPW 3 X 16 Y	8099130161	
29 (SEN801)	Remote Sensor, TFMT5380 (38 kHz)	2408005001		S8	Screw, Heatsink	8195000310	
30 (FIP801)	FIP, 12 LM 8, FL Display	2328130301		S9	Screw #1 PTC 3 X 10 B	8119130103	
31	Button Preset, ABS, Black	048543059611		S10	Screw Ground	8155000710	
32	Frame Right, SECC	6122632210					
33	Foot, ABS, Gold, Hot stamping	046033102511					
34	Foot, ABS, Black	6033102510		P1	P.C.Board Main	4001000300	
35	Cover Bottom, SECC	6122418610		P2	P.C.Board Tuner	4001000400	
36	Chassis, Front, SECC	6122214610		P2-1	P.C.Board Power Supply	4001000410	
37	Fastener	6528300110		P2-2	P.C.Board Surround Main	4001000420	
38	Heatsink Power, Aluminium	7502008310		P2-3	P.C.Board Tone	4001000430	
39	Bracket Heat Sink Right, SECC	6505135910		P2-4	P. C. Board Volume	4001000440	
40	Clamp, Wire	6525002210		P3	P.C.Board Front	4001000500	
41	Bracket Heat Sink Left, SECC	6505135810		P3-1	P.C.Board Dolby	4001000510	
42	Bracket PCB, SECC	6505130010		P3-2	P.C.Board Headphone	4001000520	
43	Frame left, SECC	6122632110		P3-3	P.C.Board Volume LED	4001000530	
44	Heatsink, Regulator TR.	7505206220			Standby Transformer, 230 V 50 Hz	2828000077	Europe
45	Heatsink, Regulator TR.	7505202410			Standby Transformer, 120 V 60 Hz	2828089007	USA/CA
46	Jack, RCA, 2P	4438108510			Card Cable, 18P, 140mm	4118618149	
47	Jack, RCA, 6P	4438108710			Card Cable, 15P 180mm	4118615189	
48	Jack, RCA, 3P	4438108810			Card Cable, 12P 450mm	4118612455	
49	Jack, RCA, 2P, Yellow	4438114210			Card Cable, 19P, 450mm	4118619459	
50	Terminal Speaker, 8P	4408105810					

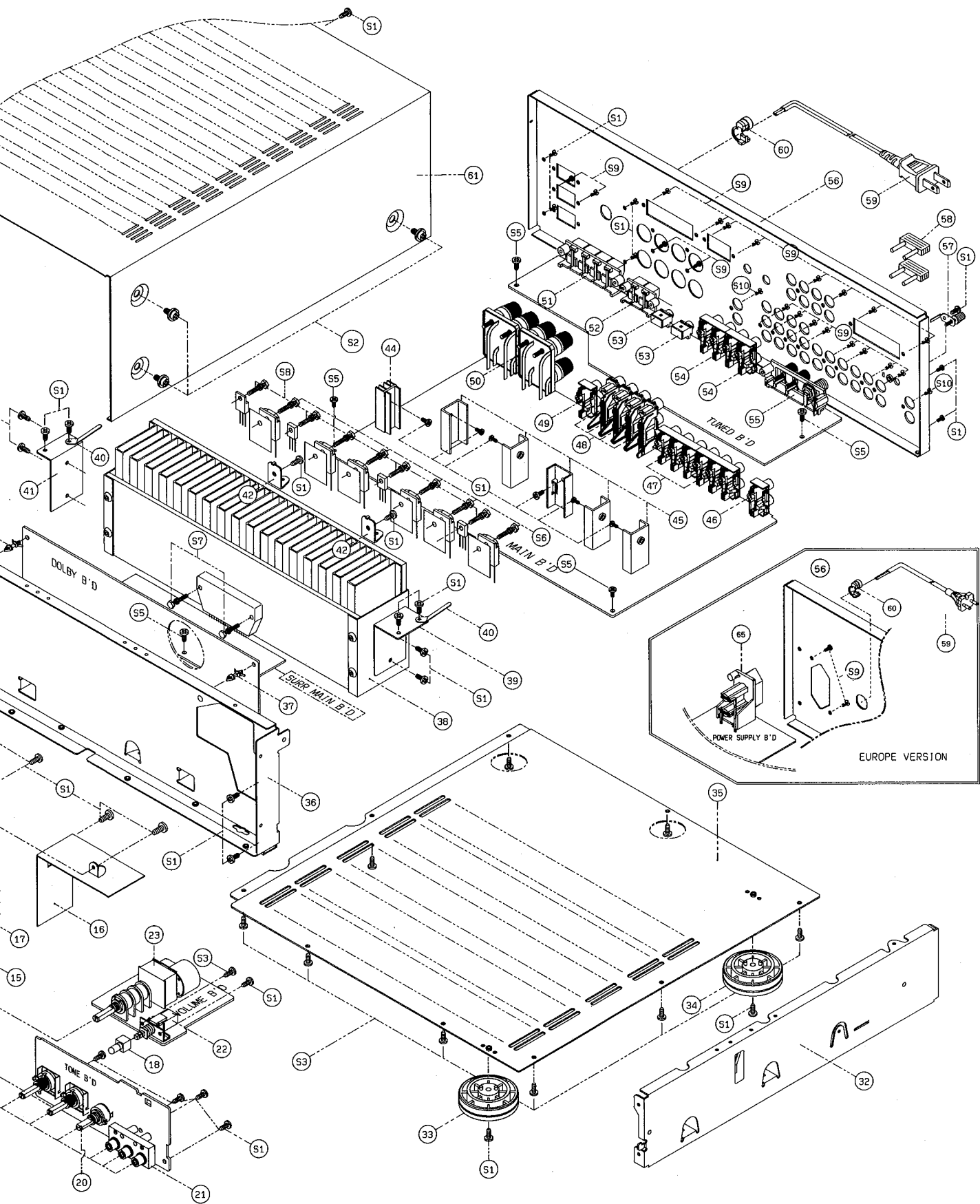
## MISCELLANEOUS

P1	P.C.Board Main	4001000300
P2	P.C.Board Tuner	4001000400
P2-1	P.C.Board Power Supply	4001000410
P2-2	P.C.Board Surround Main	4001000420
P2-3	P.C.Board Tone	4001000430
P2-4	P. C. Board Volume	4001000440
P3	P.C.Board Front	4001000500
P3-1	P.C.Board Dolby	4001000510
P3-2	P.C.Board Headphone	4001000520
P3-3	P.C.Board Volume LED	4001000530
	Standby Transformer, 230 V 50 Hz	2828000077
	Standby Transformer, 120 V 60 Hz	2828089007
	Card Cable, 18P, 140mm	4118618149
	Card Cable, 15P 180mm	4118615189
	Card Cable, 12P 450mm	4118612455
	Card Cable, 19P, 450mm	4118619459

# GENERAL UNIT

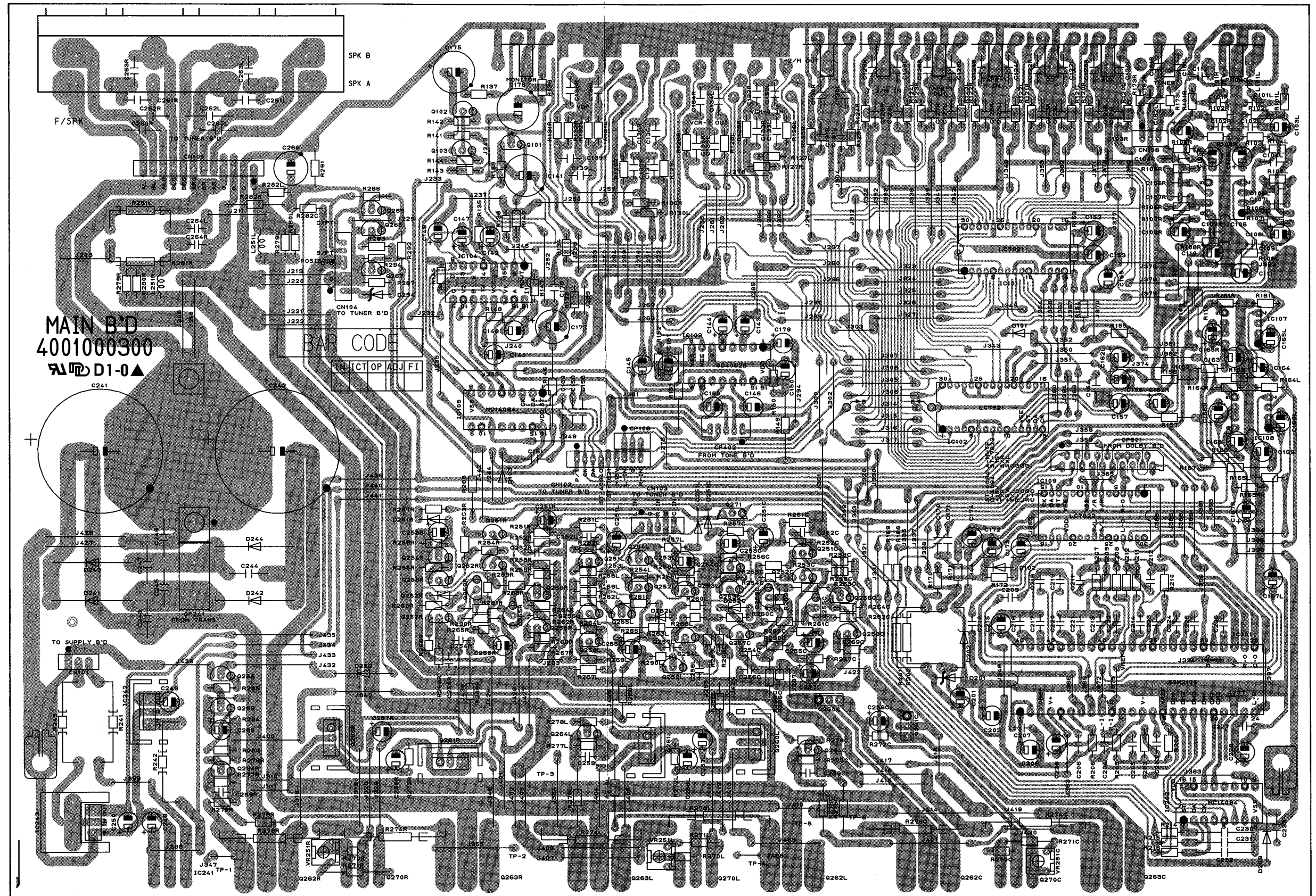




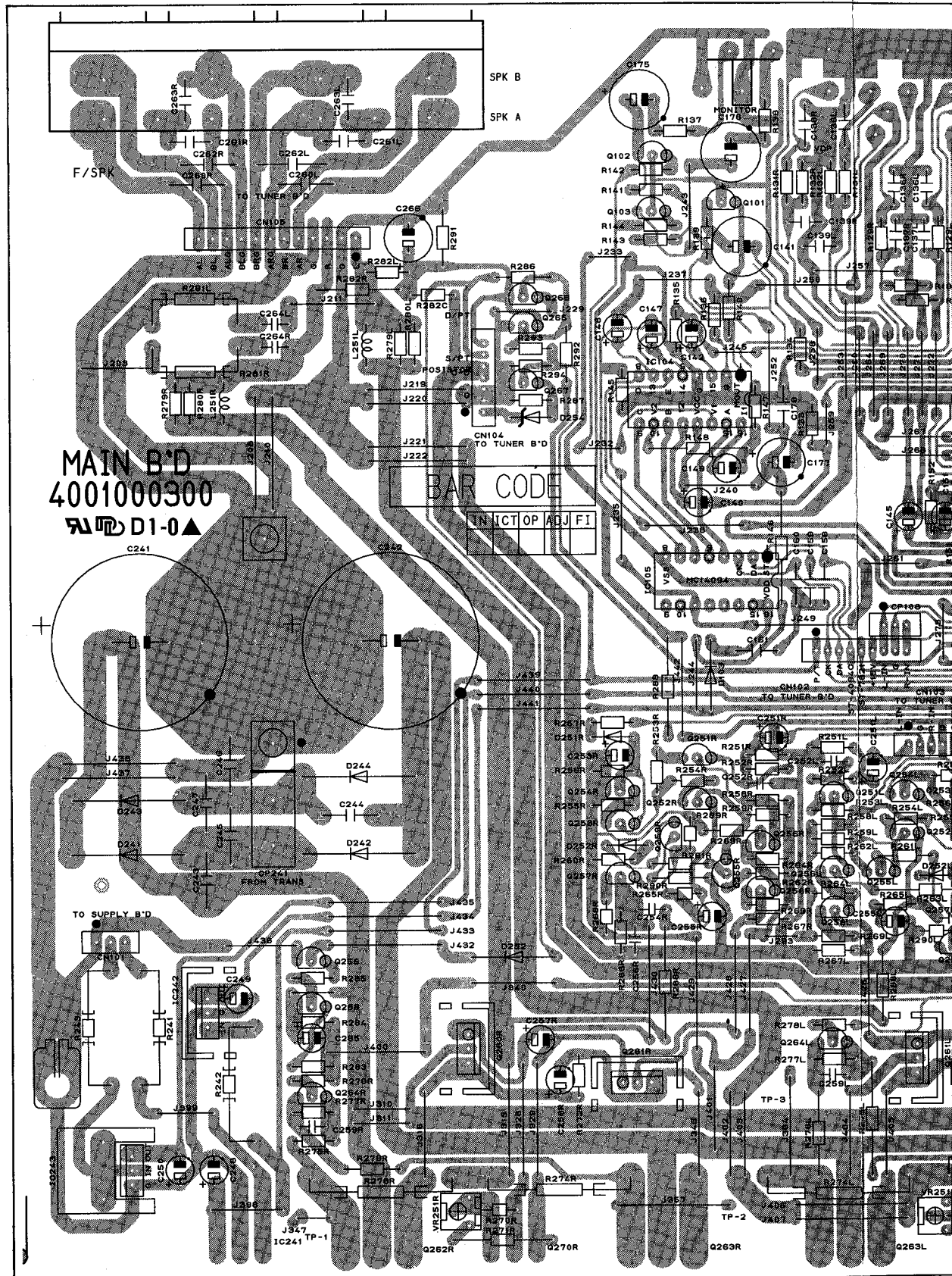




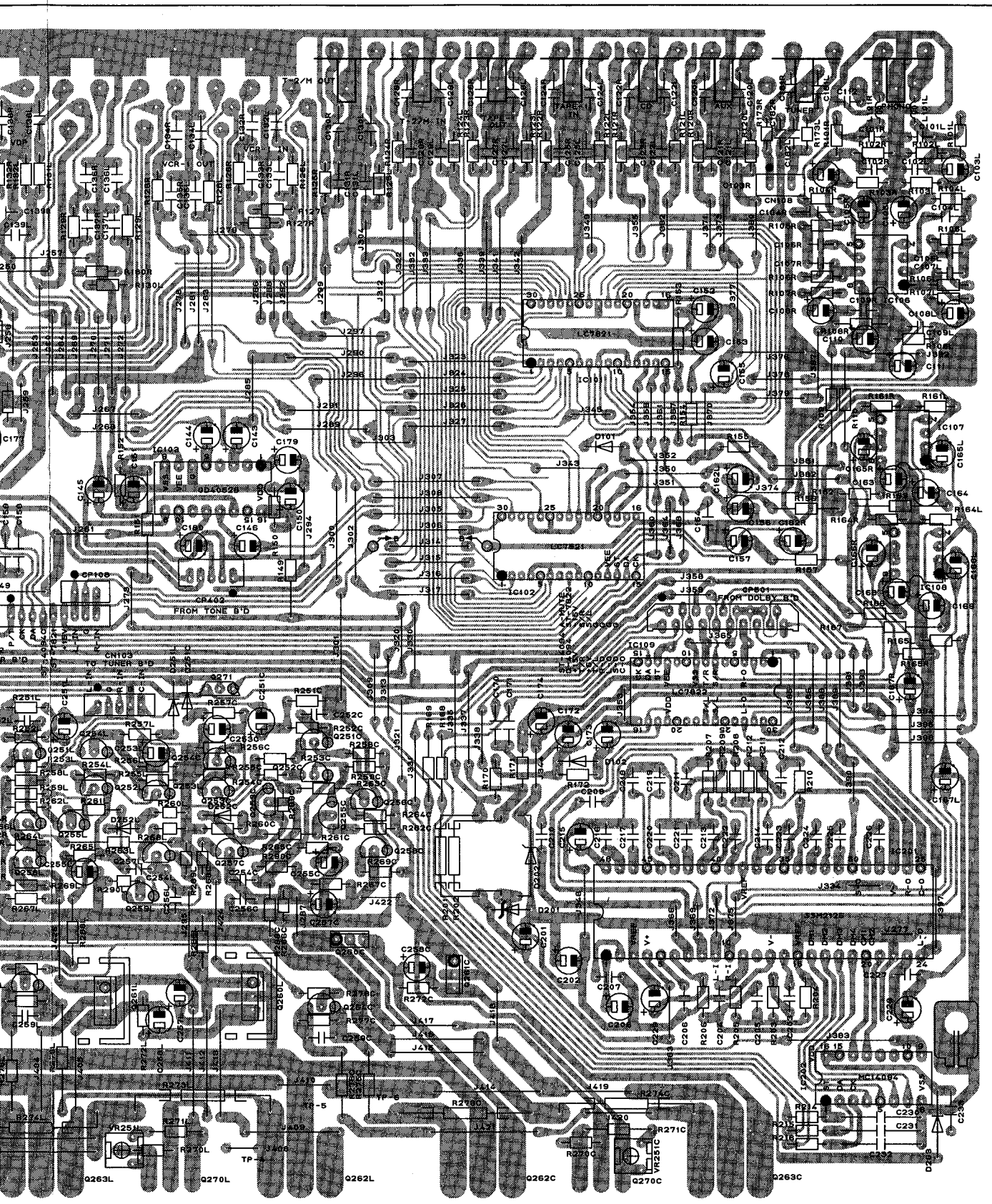
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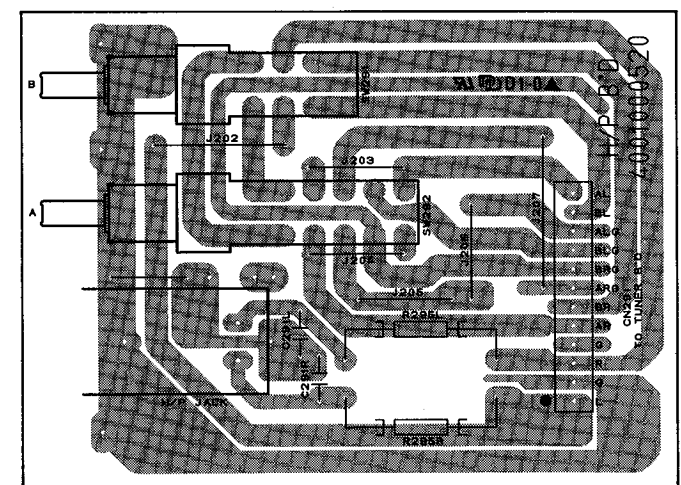
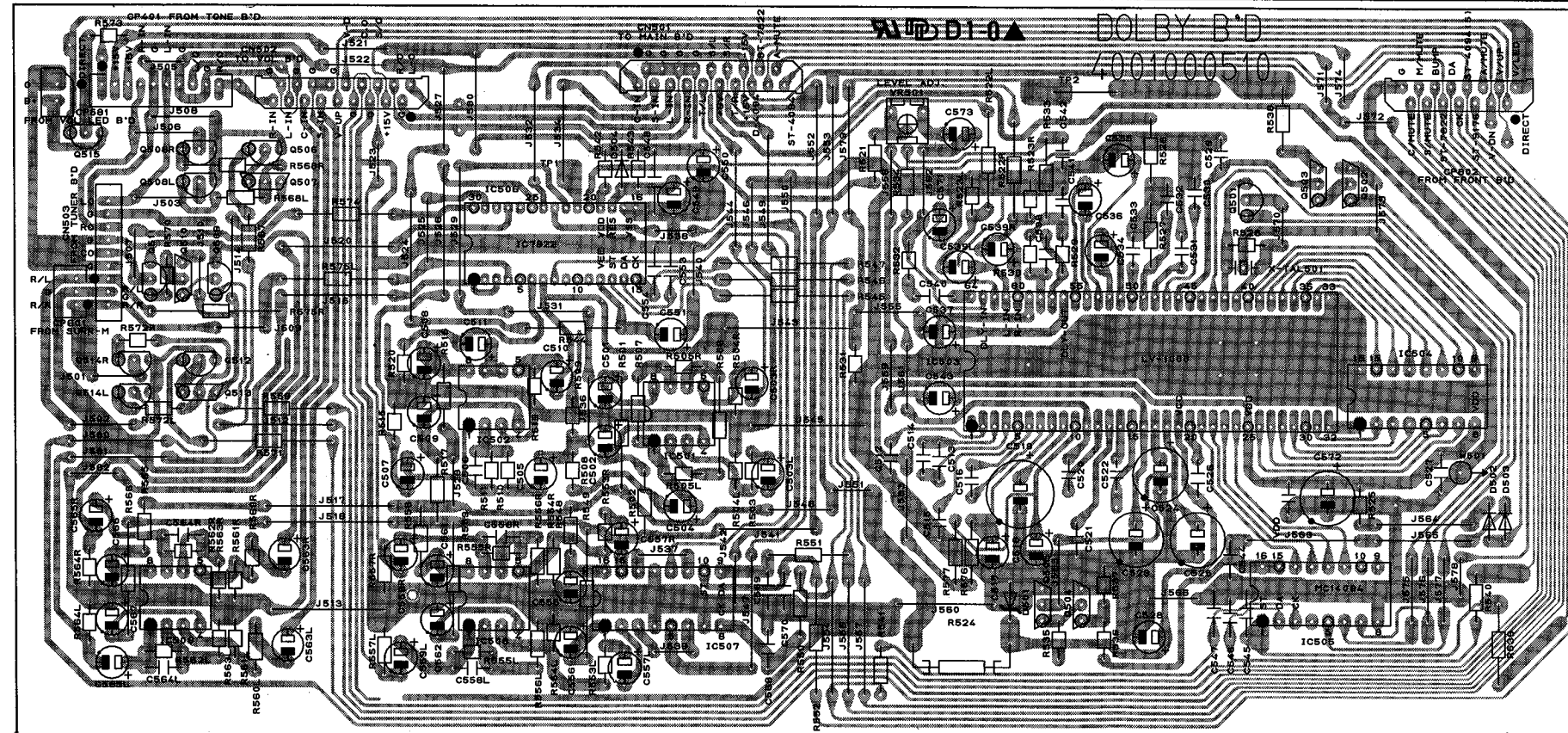
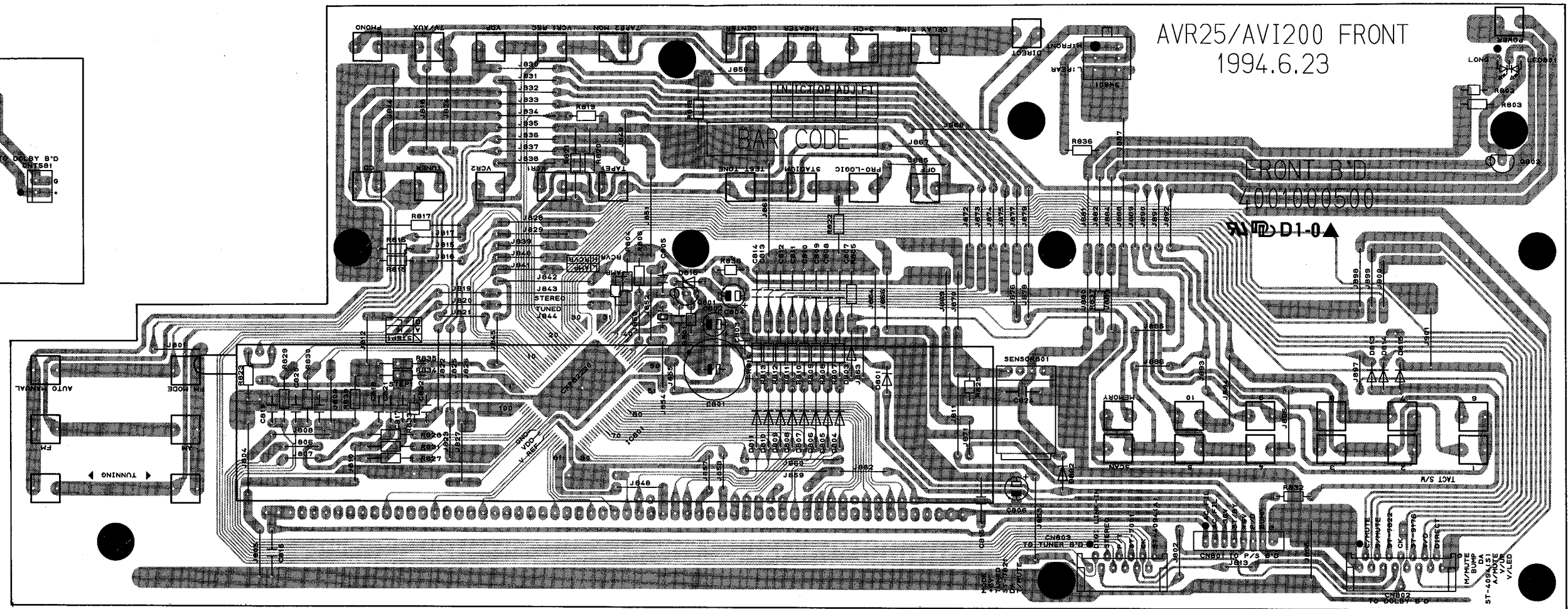
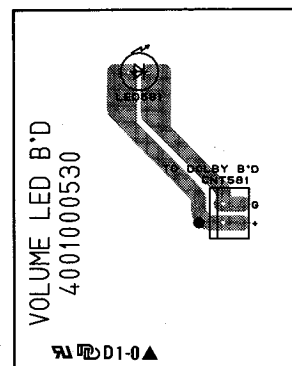
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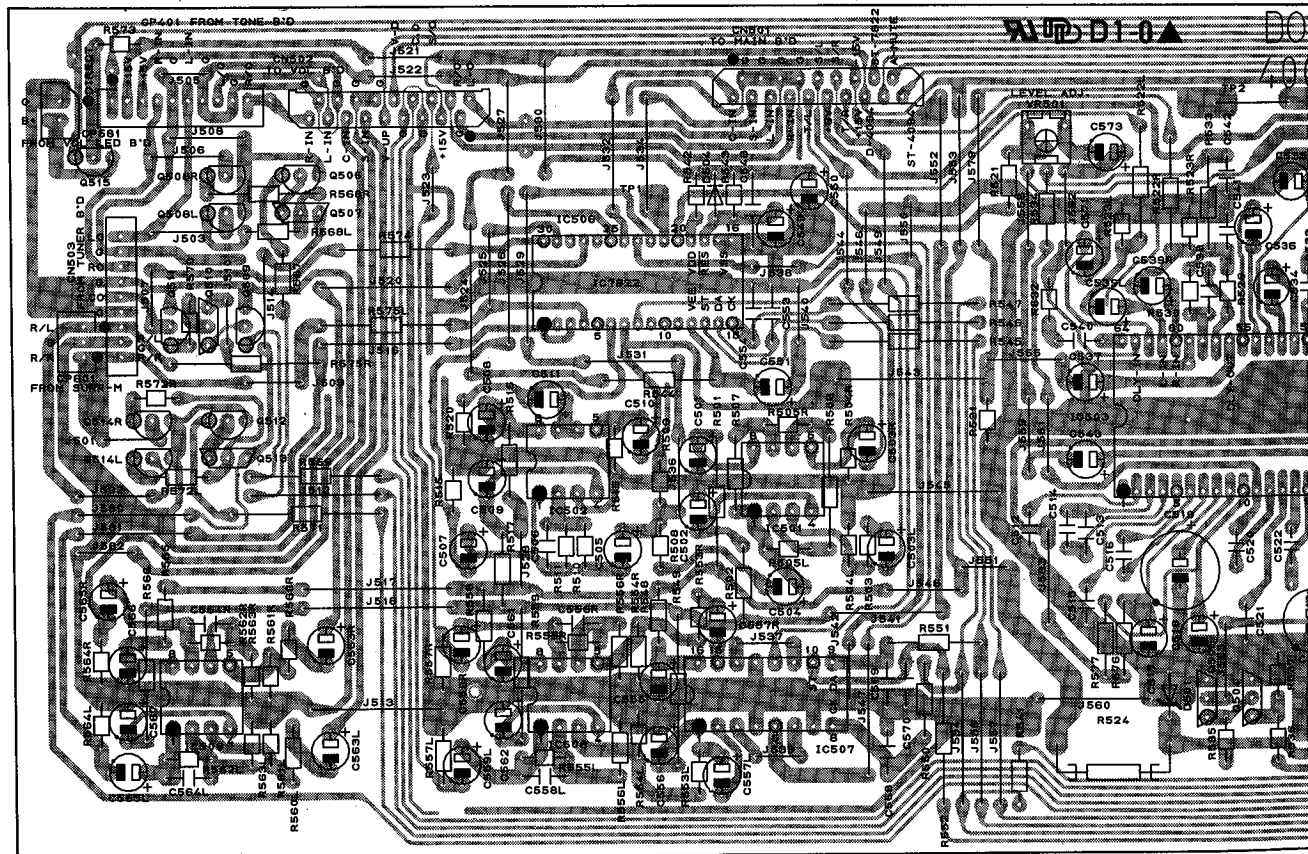
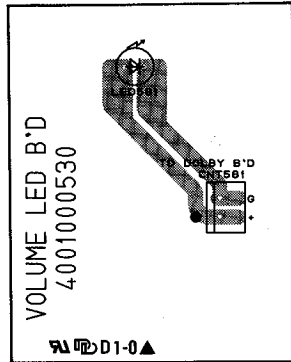




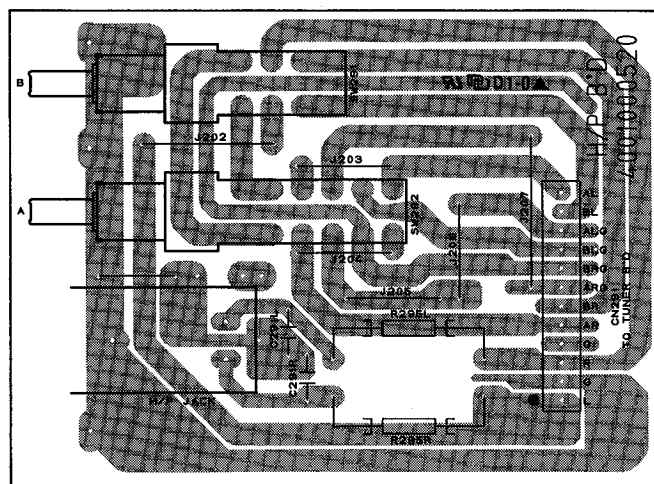
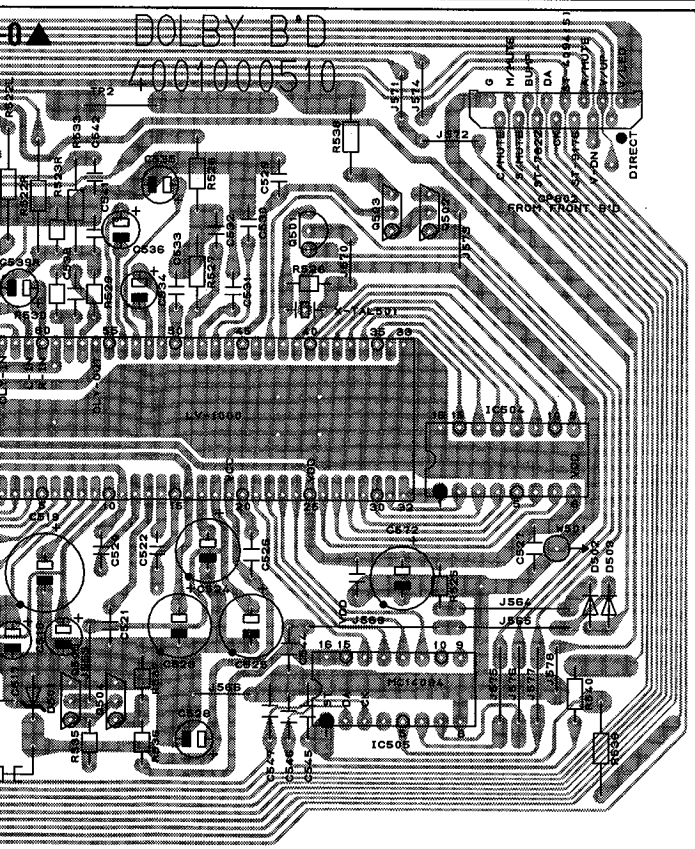


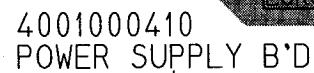
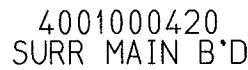




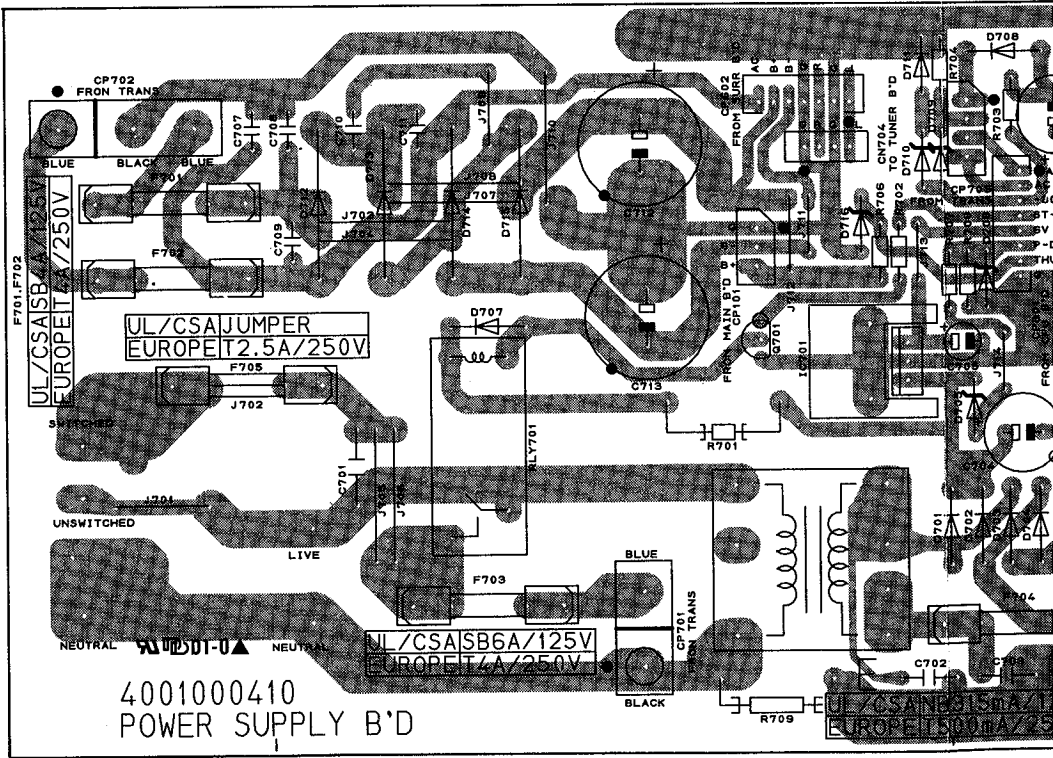
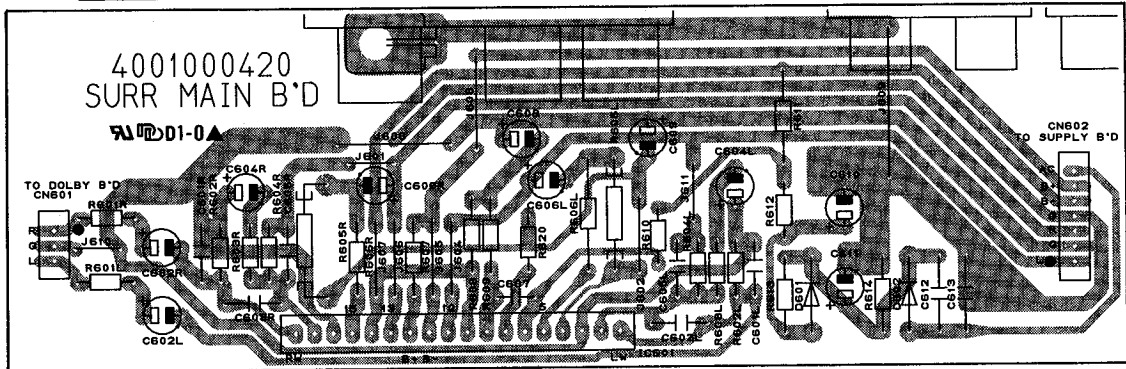
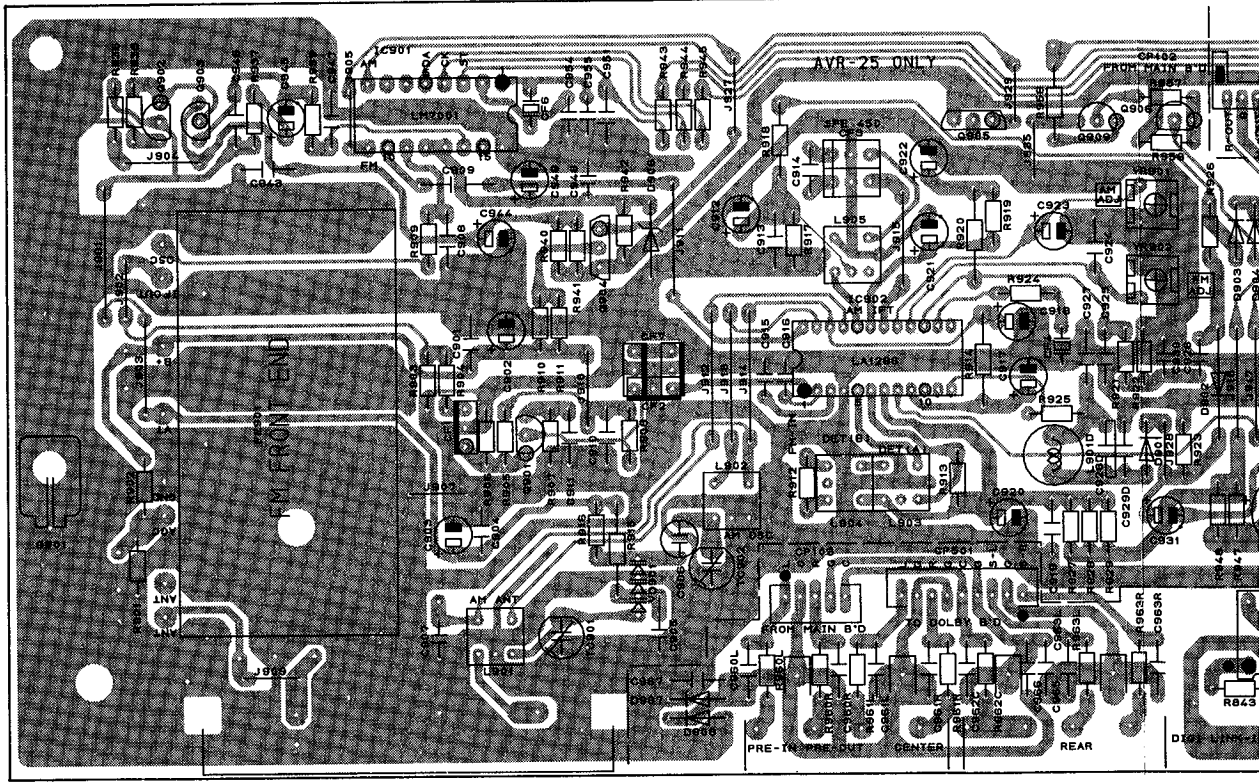


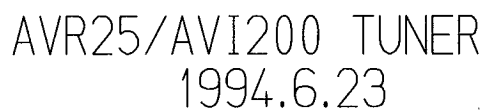












## ELECTRICAL PARTS LIST

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
	<b>ASSEMBLY HEATSINK</b>	<b>057502000150</b>			
38	Heatsink Power, Aluminium	7502008310	C208	Electrolytic SA	4.7 uF 50 V M 3479247971
39	Bracket Heat Sink Right, SECC	6505135910	C209-C212	Mylar	0.1 uF 63 V K 3679104297
40	Clamp, Wire	6525002210	C213/C214	Poly	680 pF 50 V J 3619681110
41	Bracket Heat Sink Left, SECC	6505135810	C215	Electrolytic SA	4.7 uF 50 V M 3479247971
42	Bracket PCB, SECC	6505130010	C216/C217	Mylar	0.22 uF 63 V K 3679224297
Q270C	2SC4137, NPN, Bias	2008622110	C218-C221	Mylar	0.33 uF 63 V K 3679334297
IC241	GL7815, Regulator	2168601105	C222-C225	Mylar	0.022 uF 100 V J 3679223120
Q270L/R	2SC4137, NPN, Bias	2008622110	C226/C227	Mylar	0.1 uF 63 V K 3679104297
Q262C	2SC3182N-O, NPN	2028307101	C228	Electrolytic SG	100 uF 10 V M 3479310121
Q263C	2SA1265N-O, PNP	2028007101	C229	Electrolytic SA	10 uF 50 V M 3479210071
Q262L/R	2SC3182N-O, NPN	2028307101	C230-C232	Ceramic Tubular	100 pF 50 V J 3519101935
Q263L/R	2SA1265N-O, PNP	2028007101	C233	Ceramic Disc	0.01 uF 50 V Z 3579103530
S1	Screw #2 BTC 3 X 8 B	8109230083	C241/C242	Electrolytic HM	10000 uF 80 V M 3419510345
S6	HEX MSPW 3 X 12 Y	8099130121	C243-C247	Ceramic Disc	0.01 uF 500 V Z 3509103451
S7	HEX MSPW 3 X 16 Y	8099130161	C248-C250	Electrolytic SA	1 uF 50 V M 3479210971
S8	Screw, Heatsink	8195000310	C251C	Electrolytic SG	47 uF 25 V M 3479347041
	<b>END OF ASSEMBLY HEATSINK</b>		C251L/R	Electrolytic SG	47 uF 25 V M 3479347041
			C252C	Ceramic Disc	68 pF 50 V J 3579680130
			C252L/R	Ceramic Disc	68 pF 50 V J 3579680130
			C253C	Electrolytic SA	1 uF 50 V M 3479210971
			C253L/R	Electrolytic SA	1 uF 50 V M 3479210971
			C254C	Ceramic Disc	3 pF 50 V D 3579309030
			C254L/R	Ceramic Disc	3 pF 50 V D 3579309030
			C255C	Electrolytic SG	470 uF 10 V M 3479347121
			C255L/R	Electrolytic SG	470 uF 10 V M 3479347121
			C256C	Ceramic Tubular	100 pF 50 V J 3519101935
			C256L/R	Ceramic Tubular	100 pF 50 V J 3519101935
			C257C	Electrolytic SA	10 uF 50 V M 3479210071
			C257L/R	Electrolytic SA	10 uF 50 V M 3479210071
			C258C	Electrolytic SA	4.7 uF 50 V M 3479247971
			C258L/R	Electrolytic SA	4.7 uF 50 V M 3479247971
			C259C	Mylar	0.33 uF 63 V K 3679334297
			C259L/R	Mylar	0.33 uF 63 V K 3679334297
			C264L/R	Mylar	0.047 uF 100 V J 3679473120
			C265	Electrolytic SA	1 uF 100 V M 3479210997
			C266	Electrolytic SG	470 uF 10 V M 3479347121
				<b>CONNECTORS</b>	
			CN101	Lead Ass'y, 3P, 200 mm	436103203331
			CN102	Lead Ass'y, 9P 100 mm	436209103332
			CN103	Lead Ass'y, 5P, 180 mm	436205183332
			CN104	Lead Ass'y, 7P 140 mm	436207143332
			CN105	Lead Ass'y, 12P, 140 mm	435112143401
			CP241	Plug LV AC, 3P	4428525790
			CP402	Wafer 5P	4428516410
			CP501	FPC Plug 19P	4428526310
				<b>DIODES</b>	
			D101-D103	1N4148M, Switching	2058322101
			D201/D202	Diode Zener, DZ 6.8BSC	2258599121
			D203	1N4148M, Switching	2058322101
			D241-D244	Diode, PX6A03, Rectifier	2058100138
			D251C	1N4148M, Switching	2058322101
			D251L/R	1N4148M, Switching	2058322101
			D252C	1N4148M, Switching	2058322101
			D252L/R	1N4148M, Switching	2058322101
			D254	Diode Zener, DZ 12.0BSC	2258599116
				<b>ICs</b>	
			IC101/IC102	LC7821	2168017132
<b>P1</b>	<b>Ass'y P.C.B MAIN</b>	<b>054002007547</b>			
	<b>CAPACITORS</b>				
C102L/R	Ceramic Tubular	100 pF 50 V J 3519101935			
C103L/R	Electrolytic SA	4.7 uF 50 V M 3479247971			
C105L/R	Electrolytic SA	33 uF 25 V M 3479233041			
C106L/R	Mylar	0.0018 uF 100 V J 3679182120			
C107L/R	Mylar	0.0056 uF 100 V J 3679562120			
C108L/R	Electrolytic SA	1 uF 50 V M 3479210971			
C109L/R	Mylar	0.0018 uF 100 V J 3679182120			
C110/C111	Electrolytic SG	47 uF 25 V M 3479347041			
C112	Ceramic Disc	0.01 uF 50 V Z 3579103530			
C140	Electrolytic SA	33 uF 25 V M 3479233041			
C141	Electrolytic SG	470 uF 10 V M 3479347121			
C142	Electrolytic SA	33 uF 25 V M 3479233041			
C143-C146	Electrolytic SA	10 uF 50 V M 3479210071			
C147/C148	Electrolytic SA	33 uF 25 V M 3479233041			
C149	Electrolytic SA	2.2 uF 50 V M 3479222971			
C150-C153	Electrolytic SG	47 uF 25 V M 3479347041			
C154	Ceramic Disc	0.01 uF 50 V Z 3579103530			
C155	Electrolytic SA	1 uF 50 V M 3479210971			
C156/C157	Electrolytic SG	47 uF 25 V M 3479347041			
C158	Ceramic Tubular	1000 pF 50 V J 3519102935			
C159/C160	Ceramic Tubular	100 pF 50 V J 3519101935			
C161	Ceramic Tubular	0.1 uF 50 V Z 3519104935			
C162L/R	Electrolytic SA	4.7 uF 50 V M 3479247971			
C163/C164	Electrolytic SG	47 uF 25 V M 3479347041			
C165L/R	Electrolytic SA	4.7 uF 50 V M 3479247971			
C166L/R	Electrolytic SA	10 uF 50 V M 3479210071			
C167L/R	Electrolytic SA	10 uF 50 V M 3479210071			
C168/C169	Electrolytic SG	47 uF 25 V M 3479347041			
C170/C171	Ceramic Tubular	100 pF 50 V J 3519101935			
C172	Electrolytic SG	47 uF 25 V M 3479347041			
C173	Electrolytic SA	1 uF 50 V M 3479210971			
C174	Electrolytic SG	47 uF 25 V M 3479347041			
C175-C177	Electrolytic SG	470 uF 10 V M 3479347121			
C178	Ceramic Tubular	0.1 uF 50 V Z 3519104935			
C179/C180	Electrolytic SA	10 uF 50 V M 3479210071			
C201/C202	Electrolytic SG	220 uF 10 V M 3479322121			
C203-C205	Mylar	0.01 uF 100 V J 3679103120			
C206/C207	Mylar	0.22 uF 63 V K 3679224297			

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
IC103	GD4052B	2138001114	R126L/R	Carbon Film	470 ohm 1/5 W J 3069471970
IC104	BA7625, Video Switching	2168027106	R127L/R	Carbon Film	100 kohm 1/5 W J 3069104970
IC105	MC14094BCP	2138009115	R128L/R	Carbon Film	470 ohm 1/5 W J 3069471970
IC106-IC108	KIA4559P/KIA75559P, OP Amp.	2168206104	R129L/R	Carbon Film	470 ohm 1/5 W J 3069471970
IC109	LC7822	2168017139	R130L/R	Carbon Film	100 kohm 1/5 W J 3069104970
IC201	SSM-2126A	2168000122	R131L/R	Carbon Film	470 ohm 1/5 W J 3069471970
IC202	MC14094BCP	2138009115	R132L/R	Carbon Film	100 kohm 1/5 W J 3069104970
IC242	GL7806, Regulator	2168601110	R133-R138	Carbon Film	75 ohm 1/5 W J 3069750970
IC243	GL7915, Regulator	2168601111	R139-R144	Carbon Film	100 ohm 1/5 W J 3069101970
			R145	Carbon Film	75 ohm 1/5 W J 3069750970
	<b>COILS</b>		R146	Carbon Film	10 ohm 1/5 W J 3069100970
L251L/R	Coil, Inductor, 0.5 uH	2648001010	R147/R148	Carbon Film	100 ohm 1/5 W J 3069101970
			R149-R152	Carbon Film	3.3 kohm 1/5 W J 3069332970
			R153/R154	Carbon Film	220 ohm 1/5 W J 3069221970
	<b>TRANSISTORS</b>		R155	Carbon Film	100 kohm 1/5 W J 3069104970
Q101-Q103	BKTA1266Y/KTA1015Y, PNP	2208206105	R156/R157	Carbon Film	220 ohm 1/5 W J 3069221970
Q251C	KTA2400-GG, PNP	2208006100	R161L/R	Carbon Film	100 kohm 1/5 W J 3069104970
Q251L/R	KTA2400-GG, PNP	2208006100	R162/R163	Carbon Film	220 ohm 1/5 W J 3069221970
Q252C	KTA2400-GG, PNP	2208006100	R164L/R	Carbon Film	100 kohm 1/5 W J 3069104970
Q252L/R	KTA2400-GG, PNP	2208006100	R165L/R	Carbon Film	100 kohm 1/5 W J 3069104970
Q253C	KTA2400-GG, PNP	2208006100	R166/R167	Carbon Film	220 ohm 1/5 W J 3069221970
Q253L/R	KTA2400-GG, PNP	2208006100	R168/R169	Carbon Film	100 ohm 1/5 W J 3069101970
Q254C	BKTA1266Y/KTA1015Y, PNP	2208206105	R170/R171	Carbon Film	220 ohm 1/5 W J 3069221970
Q254L/R	BKTA1266Y/KTA1015Y, PNP	2208206105	R172	Carbon Film	100 kohm 1/5 W J 3069104970
Q255C	KTC2240BL/KTC3200, NPN	2208606108	R201/R202	Metal Film	150 ohm 1 W J 3029151470
Q255L/R	KTC2240BL/KTC3200, NPN	2208606108	R203-R205	Carbon Film	22 kohm 1/5 W J 3069223970
Q256C	KTC2240BL/KTC3200, NPN	2208606108	R206	Carbon Film	10 Mohm 1/5 W J 3069106970
Q256L/R	KTC2240BL/KTC3200, NPN	2208606108	R207	Carbon Film	47 kohm 1/5 W J 3069473970
Q257C	KTA949/KTA1024Y, PNP	2208206102	R208	Carbon Film	15 kohm 1/5 W J 3069153970
Q257L/R	KTA949/KTA1024Y, PNP	2208206102	R209/R210	Carbon Film	7.5 kohm 1/5 W J 3069752970
Q258C	KTC2229/KTC3206Y, NPN	2208606118	R211	Carbon Film	47 kohm 1/5 W J 3069473970
Q258L/R	KTC2229/KTC3206Y, NPN	2208606118	R212	Carbon Film	15 kohm 1/5 W J 3069153970
Q259C	KTA1268/KTA970, PNP	2008206104	R214-R216	Carbon Film	1 kohm 1/5 W J 3069102970
Q259L/R	KTA1268/KTA970, PNP	2008206104	R241	Metal Film	4.7 ohm 2 W J 3029479570
Q260C	2SC4883A-Y, NPN	2028316100	R242/R243	Metal Film	10 ohm 2 W J 3029100570
Q260L/R	2SC4883A-Y, NPN	2028316100	R251C	Carbon Film	33 kohm 1/5 W J 3069333970
Q261C	2SA1859A-Y, PNP	2028016100	R251L/R	Carbon Film	33 kohm 1/5 W J 3069333970
Q261L/R	2SA1859A-Y, PNP	2028016100	R252C	Carbon Film	330 ohm 1/5 W J 3069331970
Q264C	KTC3198Y/KTC1815Y, NPN	2208606104	R252L/R	Carbon Film	330 ohm 1/5 W J 3069331970
Q264L/R	KTC3198Y/KTC1815Y, NPN	2208606104	R253C	Carbon Film	390 ohm 1/5 W J 3069391970
Q265-Q267	KTC3198Y/KTC1815Y, NPN	2208606104	R253L/R	Carbon Film	390 ohm 1/5 W J 3069391970
Q268	BKTA1266Y/KTA1015Y, PNP	2208206105	R254C	Carbon Film	390 ohm 1/5 W J 3069391970
Q269	KTC3198Y/KTC1815Y, NPN	2208606104	R254L/R	Carbon Film	390 ohm 1/5 W J 3069391970
Q271	DTC114YS	2208622106	R255C	Carbon Film	270 ohm 1/5 W J 3069271970
			R255L/R	Carbon Film	270 ohm 1/5 W J 3069271970
	<b>RESISTORS</b>		R256C	Carbon Film	10 kohm 1/5 W J 3069103970
R101L/R	Carbon Film	1 kohm 1/5 W J 3069102970	R256L/R	Carbon Film	10 kohm 1/5 W J 3069103970
R102L/R	Carbon Film	91 kohm 1/5 W J 3069913970	R257C	Carbon Film	33 kohm 1/5 W J 3069333970
R103L/R	Carbon Film	91 kohm 1/5 W J 3069913970	R257L/R	Carbon Film	33 kohm 1/5 W J 3069333970
R104L/R	Carbon Film	820 ohm 1/5 W J 3069821970	R258C	Carbon Film	1.5 kohm 1/5 W J 3069152970
R105L/R	Carbon Film	43 kohm 1/5 W J 3069433970	R258L/R	Carbon Film	1.5 kohm 1/5 W J 3069152970
R106L/R	Carbon Film	560 kohm 1/5 W J 3069564970	R259C	Carbon Film	1.5 kohm 1/5 W J 3069152970
R107L/R	Carbon Film	560 ohm 1/5 W J 3069561970	R259L/R	Carbon Film	1.5 kohm 1/5 W J 3069152970
R108L/R	Carbon Film	100 kohm 1/5 W J 3069104970	R260C	Carbon Film	560 ohm 1/5 W J 3069561970
R109/R110	Carbon Film	220 ohm 1/5 W J 3069221970	R260L/R	Carbon Film	560 ohm 1/5 W J 3069561970
R120L/R	Carbon Film	470 ohm 1/5 W J 3069471970	R261C	Carbon Film	560 ohm 1/5 W J 3069561970
R121L/R	Carbon Film	470 ohm 1/5 W J 3069471970	R261L/R	Carbon Film	560 ohm 1/5 W J 3069561970
R122L/R	Carbon Film	470 ohm 1/5 W J 3069471970	R262C	Carbon Film	560 ohm 1/5 W J 3069561970
R123L/R	Carbon Film	470 ohm 1/5 W J 3069471970	R262L/R	Carbon Film	560 ohm 1/5 W J 3069561970
R124L/R	Carbon Film	1 kohm 1/5 W J 3069102970	R263C	Carbon Film	560 ohm 1/5 W J 3069561970
R125L/R	Carbon Film	470 ohm 1/5 W J 3069471970			



39

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
CF4	Filter, Ceramic, BFU450C4N	3908001020	R616L/R	Carbon Film 15 kohm 1/5 W J	3069153970
CF5	Resonator, CSB456F11	3938001009	R617L/R	Cement 0.47 ohm 2 W J	3059478572
CF6	X-TAL, 7.2MHZ, HC-49/U	3908101031	R618L/R	Carbon Film 22 kohm 1/5 W J	3069223970
			R619L/R	Carbon Film 2.2 kohm 1/5 W J	3069222970
	<b>CONNECTORS</b>		R620L/R	Carbon Film 22 ohm 1/5 W J	3069220970
CP102	Wafer 9P	4428525590	R621L/R	Carbon Film 22 ohm 1/5 W J	3069220970
CP103	Wafer 5P	4428516410	R622L/R	Carbon Film 22 ohm 1/5 W J	3069220970
CP104	Wafer 7P	4428516610	R623L/R	Carbon Film 22 ohm 1/5 W J	3069220970
CP105	Wafer 12P	4428510720	R840	Carbon Film 100 ohm 1/5 W J	3069101970
CP291	Wafer 12P	4428510720	R841	Carbon Film 47 kohm 1/5 W J	3069473970
CP501	Wafer 9P	4428516810	R842	Carbon Film 47 ohm 1/5 W J	3069470970
CP704	Wafer 4P	4428516310	R843	Carbon Film 270 ohm 1/5 W J	3069271970
CP803	FPC Plug 12P	4428526246	R844	Carbon Film 3.9 kohm 1/5 W J	3069392970
CP901	Wafer 2P	4428508210	R901	Carbon Film 56 kohm 1/5 W J	3069563970
CP902	Wafer 2P	4428508210	R902	Carbon Film 100 kohm 1/5 W J	3069104970
			R903	Carbon Film 560 ohm 1/5 W J	3069561970
	<b>DIODES</b>		R904	Carbon Film 180 ohm 1/5 W J	3069181970
D603L/R	1N4148M, Switching	2058322101	R905	Carbon Film 3.3 kohm 1/5 W J	3069332970
D604L/R	1N4148M, Switching	2058322101	R906	Carbon Film 470 ohm 1/5 W J	3069471970
D605L/R	1N4148M, Switching	2058322101	R907/R908	Carbon Film 330 ohm 1/5 W J	3069331970
D817	1N4148M, Switching	2058322101	R909	Carbon Film 560 ohm 1/5 W J	3069561970
D901-D905	1N4148M, Switching	2058322101	R910/R911	Carbon Film 180 ohm 1/5 W J	3069181970
D906	Diode Zener, UZ 5.1BSB	2258599103	R912	Carbon Film 3.3 kohm 1/5 W J	3069332970
D907-D910	1N4148M, Switching	2058322101	R913	Carbon Film 10 kohm 1/5 W J	3069103970
			R914	Carbon Film 47 kohm 1/5 W J	3069473970
	<b>FRONT-END</b>		R915/R916	Carbon Film 100 kohm 1/5 W J	3069104970
FE901	FM Tuner, FE407-A15	3928801970	R917	Carbon Film 68 kohm 1/5 W J	3069683970
			R918	Carbon Film 4.3 kohm 1/5 W J	3069432970
	<b>ICs</b>		R919	Carbon Film 10 kohm 1/5 W J	3069103970
IC802	LTV817, Photo-Coupler	2408000136	R920	Carbon Film 24 kohm 1/5 W J	3069243970
IC901	LM7001	2138017112	R921	Carbon Film 10 kohm 1/5 W J	3069103970
IC902	LA1266	2168017128	R924	Carbon Film 82 ohm 1/5 W J	3069820970
IC903	KA2265, MPX	2168002112	R925	Carbon Film 1.8 kohm 1/5 W J	3069182970
			R926	Carbon Film 100 kohm 1/5 W J	3069104970
	<b>COILS</b>		R927-R929	Carbon Film 330 ohm 1/5 W J	3069331970
L251C	Coil, Inductor, 0.5 uH	2648001010	R930	Carbon Film 1 kohm 1/5 W J	3069102970
L601L/R	Coil, Inductor, 0.5 uH	2648001010	R931L/R	Carbon Film 180 kohm 1/5 W J	3069184970
L906L/R	MPX 19 k/38 kHz, Coil, Black	2658001050	R932L/R	Carbon Film 150 kohm 1/5 W J	3069154970
L901	Coil, AM ANT	2608201120	R933L/R	Carbon Film 3.3 kohm 1/5 W J	3069332970
L902	Coil, AM OSC	2638201150	R934L/R	Carbon Film 3.3 kohm 1/5 W J	3069332970
L903	Coil, FM QUAD DET A	2838501110	R935L/R	Carbon Film 3.3 kohm 1/5 W J	3069332970
L904	Coil, FM QUAD DET B	2838501210	R936	Carbon Film 1 kohm 1/5 W J	3069102970
L905	Coil, AM IFT, P-7SB	2848001250	R937	Carbon Film 1.5 kohm 1/5 W J	3069152970
			R938	Carbon Film 82 ohm 1/5 W J	3069820970
	<b>TRANSISTORS</b>		R939	Carbon Film 820 ohm 1/5 W J	3069821970
Q601L/R	KTC3198Y/KTC1815Y, NPN	2208606104	R940-R942	Carbon Film 330 ohm 1/5 W J	3069331970
Q901	KTC1923Y/KTC3194Y, NPN	2208406103	R943-R945	Carbon Film 100 ohm 1/5 W J	3069101970
Q902	KTC2240BL/KTC3200, NPN	2208606108	R946	Carbon Film 2.7 kohm 1/5 W J	3069272970
Q903	FET, 2SK168D, N-CH.	2018211100	R947/R948	Carbon Film 270 ohm 1/5 W J	3069271970
Q904/Q905	DTA114YS, PNP	2208222105	R949/R950	Carbon Film 4.7 kohm 1/5 W J	3069472970
Q906	BKTA1266Y/KTA1015Y, PNP	2208206105	R951/R952	Carbon Film 10 kohm 1/5 W J	3069103970
Q907	DTA114YS, PNP	2208222105	R955	Carbon Film 100 kohm 1/5 W J	3069104970
Q908L/R	KTD1302, NPN	2208606112	R956	Carbon Film 3.3 kohm 1/5 W J	3069332970
Q909	KTC3198Y/KTC1815Y, NPN	2208606104	R957	Carbon Film 47 kohm 1/5 W J	3069473970
			R958	Carbon Film 10 kohm 1/5 W J	3069103970
	<b>RESISTORS</b>		R959/R960	Carbon Film 4.7 kohm 1/5 W J	3069472970
R279C	Carbon Film 22 ohm 1/5 W J	3069220970	R960L/R	Carbon Film 1 kohm 1/5 W J	3069102970
R280C	Carbon Film 22 ohm 1/5 W J	3069220970	R961L/R	Carbon Film 1 kohm 1/5 W J	3069102970
R281C	Metal Film 10 ohm 1 W J	3029100470	R962C	Carbon Film 1 kohm 1/5 W J	3069102970
R615L/R	Carbon Film 390 ohm 1/5 W J	3069391970	R963L/R	Carbon Film 1 kohm 1/5 W J	3069102970

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
<b>TRIMMERS</b>			<b>RESISTORS</b>		
TC901	Capacitor, Trimmer, 20 pF	3838001160	R701	Metal Film 10 ohm 1 W J	3029100470
TC902	Capacitor, Trimmer, 10 pF	3838001150	R702	Carbon Film 2 kohm 1/5 W J	3069202970
<b>VARACTOR</b>			R703	Carbon Film 330 ohm 1/5 W J	3069331970
VD901	KV1236Z, Diode, Varactor	2058819106	R704	Carbon Film 15 kohm 1/5 W J	3069153970
<b>SEMI FIXED RESISTORS</b>			R706	Carbon Film 6.8 kohm 1/5 W J	3069682970
VR901	Semi, 50 k(B)	3248050343	R707	Carbon Film 1 kohm 1/5 W J	3069102970
VR902	Semi, 50 k(B)	3248050343	R708	Carbon Film 10 kohm 1/5 W J	3069103970
VR903	Semi, 200 k (B)	3248020443	R709	Carbon Film 3.3 Mohm 1/2 W J	3009335373
<b>MISCELLANEOUS</b>			<b>RELAY</b>		
G901	Plate, Ground	4235007310	RLY701	HR-CR313(TV-3)	5528042002
51	Terminal Speaker, 4P	4408105410	<b>MISCELLANEOUS</b>		
52	Terminal Speaker, 2P	4408107010	F701	Fuse, SB 4A 125V	5508102921
53	Jack, Multiroom	4438006510	F702	Fuse, SB 4A 125V	5508102921
54	Jack, RCA, 4P	4438108610	F703	Fuse, SB 6A 125V	5508103121
55	Terminal, Antenna	4408108310	F704	Fuse, NB 315mA 125V	5508201421
S5	Screw #2 WPTC 3 X 8 Y	8159230081	G701	Plate, Ground	4235007310
<b>END OF P.C.B TUNER</b>			G702	Plate, Ground	4235007310
<b>P2-1 Ass'y P.C.B POWER SUPPLY 054002007561</b>			63	Heatsink (H:30), Regulator TR.	7505206210
<b>CAPACITORS</b>			64	Tie locking	6528002810
C701	Ceramic Disc 0.0047 uF 400 V Z	3549472410	65	Outlet, 3P	4448102910
C702/C703	Ceramic Tubular 0.047 uF 50 V Z	3519473935	S1	Screw #2 BTC 3 X 8 B	8109230083
C704	Electrolytic SG 220 uF 16 V M	3479322131	S5	Screw #2 WPTC 3 X 8 Y	8159230081
C705	Electrolytic SA 1 uF 50 V M	3479210971		Pin, Solder	4228001410
C706	Electrolytic SG 100 uF 50 V M	3479310171		Clip Fuse	4255001010
C707-C711	Mylar 0.047 uF 100 V J	3679473120	<b>END OF P.C.B POWER SUPPLY</b>		
C712	Electrolytic SG 3300 uF 35 V M	3409333262	<b>P2-2 Ass'y P.C.B SURROUND 054002007563</b>		
C713	Electrolytic SG 2200 uF 35 V M	3409322269	<b>CAPACITORS</b>		
<b>CONNECTORS</b>			C601L/R	Ceramic Tubular 2200 pF 50 V J	3519222935
CN704	Lead Ass'y, 4P, 160 mm	436204163332	C602L/R	Electrolytic SA 2.2 uF 50 V M	3479222971
CP101	Plug LV AC, 3P	4428525790	C603L/R	Ceramic Tubular 100 pF 50 V J	3519101935
CP602	Wafer 7P	4428516610	C604L/R	Electrolytic SA 2.2 uF 50 V M	3479222971
CP701	Plug LV AC, 2P	4428525780	C605L/R	Ceramic Tubular 4.7 pF 50 V J	3519047935
CP702	Plug LV AC, 3P	4428525790	C606L/R	Electrolytic SA 47 uF 35 V M	3479247061
CP703	Wafer 4P	4428505610	C607	Mylar 0.1 uF 63 V K	3679104297
CP801	Wafer 8P	4428516710	C608/C909	Electrolytic SA 10 uF 50 V M	3479210071
<b>DIODES</b>			C610/C611	Electrolytic SA 10 uF 50 V M	3479210071
D701-D704	1N4002, Rectifier	2258100135	C612/C613	Ceramic Tubular 2200 uF 50 V Z	3519222935
D705/D706	Diode Zener, UZ 5.1BSB	2258599103	<b>CONNECTORS</b>		
D707/D708	1N4002, Rectifier	2258100135	CN601	Lead Ass'y, 3P, 180 mm	436203183332
D709	Diode Zener, UZ 7.5BSC	2258599130	CN602	Lead Ass'y, 7P, 350 mm	436207353332
D710/D711	Diode Zener, UZ 15.0BSC	2258599109	<b>DIODES</b>		
D712-D715	1N5402, Rectifier	2058100136	D601/602	1N4002, Rectifier	2258100135
D716	Diode Zener, UZ 5.1BSB	2258599103	D606	1N4002, Rectifier	2258100135
<b>IC</b>			<b>IC</b>		
IC701	GL7806, Regulator	2168601110	IC601	STK4132 II, Hybrid IC	2178317129
<b>TRANSISTOR</b>					
Q701	KTC3198Y/KTC1815Y, NPN	2208606104			

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
<b>RESISTORS</b>			R403L/R	Carbon Film	5.1 kohm 1/5 W J 3069512970
R601L/R	Carbon Film	1 kohm 1/5 W J 3069102970	R404L/R	Carbon Film	560 ohm 1/5 W J 3069561970
R602L/R	Carbon Film	47 kohm 1/5 W J 3069473970	R405L/R	Carbon Film	100 kohm 1/5 W J 3069104970
R603L/R	Carbon Film	2 kohm 1/5 W J 3069202970	R406L/R	Carbon Film	1 kohm 1/5 W J 3069102970
R604L/R	Carbon Film	43 kohm 1/5 W J 3069433970	R407L/R	Carbon Film	100 kohm 1/5 W J 3069104970
R605L/R	Metal Film	2.2 kohm 1 W J 3029222470	R408L/R	Carbon Film	100 kohm 1/5 W J 3069104970
R606L/R	Carbon Film	1.3 kohm 1/5 W J 3069132970	R409L/R	Carbon Film	1 Mohm 1/5 W J 3069105970
R607	Carbon Film	10 ohm 1/5 W J 3069100970	R410/R411	Carbon Film	220 ohm 1/5 W J 3069221970
R608	Carbon Film	1.5 kohm 1/5 W J 3069152970	R412L/R	Carbon Film	560 ohm 1/5 W J 3069561970
R609	Carbon Film	1 kohm 1/5 W J 3069102970	R413L/R	Carbon Film	100 kohm 1/5 W J 3069104970
R610	Carbon Film	10 kohm 1/5 W J 3069103970	R414/R415	Carbon Film	220 ohm 1/5 W J 3069221970
R611	Carbon Film	390 kohm 1/5 W J 3069394970	R416L/R	Carbon Film	22 kohm 1/5 W J 3069223970
R612	Carbon Film	68 kohm 1/5 W J 3069683970	R417L/R	Carbon Film	3.3 kohm 1/5 W J 3069332970
R613	Carbon Film	220 kohm 1/5 W J 3069224970	R418L/R	Carbon Film	3.6 kohm 1/5 W J 3069362970
R614	Carbon Film	4.7 kohm 1/5 W J 3069472970	R419L/R	Carbon Film	6.2 kohm 1/5 W J 3069622970
R620	Carbon Film	100 ohm 1/5 W J 3069101970	R420L/R	Carbon Film	1 kohm 1/5 W J 3069102970
<b>MISCELLANEOUS</b>			R421L/R	Carbon Film	1.2 kohm 1/5 W J 3069122970
	Plate, Ground	4235007310	R422L/R	Carbon Film	1.2 kohm 1/5 W J 3069122970
S5	Screw #2 WPTC 3 X 8 Y	8159230081	R423	Carbon Film	12 kohm 1/5 W J 3069123970
<b>END OF P.C.B SURROUND</b>			R424	Carbon Film	100 ohm 1/5 W J 3069101970
			R425/R426	Carbon Film	3.6 kohm 1/5 W J 3069362970
			R431L/R	Carbon Film	470 ohm 1/5 W J 3069471970
<b>P2-3 Ass'y P.C.B TONE 054002007565</b>			<b>RELAY</b>		
<b>CAPACITORS</b>			RLY401	Relay, G5V-2-H1	5528040001
C402L/R	Ceramic Tubular	22 pF 50 V J 3519220935	<b>MISCELLANEOUS</b>		
C403/C404	Electrolytic SG	47 uF 25 V M 3479347041		Volume Rotary (Bass/Treble)	3208049510
C405L/R	Electrolytic SA	10 uF 50 V M 3479210071	19	Volume Rotary (Balance)	3208052010
C406L/R	Electrolytic SA	10 uF 50 V M 3479210071	20	Jack, RCA, 3P	4438109710
C407L/R	Ceramic Disc	39 pF 50 V J 3579390130	21	Screw #2 BTC 3 X 8 B	8109230083
C409L/R	Ceramic Tubular	39 pF 50 V J 3519390935	S1		
C410L/R	Electrolytic SA	10 uF 50 V M 3479210071	<b>END OF ASS'Y P.C.B TONE</b>		
C411/C412	Electrolytic SG	47 uF 25 V M 3479347041	<b>P2-4 Ass'y P. C. B VOLUME 054002007567</b>		
C413L/R	Electrolytic SA	10 uF 50 V M 3479210071	<b>CAPACITORS</b>		
C414L/R	Mylar	0.015 uF 100 V J 3679153120	C301L/R	Ceramic Tubular	470 pF 50 V J 3519471935
C415L/R	Mylar	0.082 uF 100 V J 3679823120	C302L/R	Mylar	0.082 uF 100 V J 3679823120
C417L/R	Mylar	0.0018 uF 100 V J 3679182120	C303	Electrolytic SG	47 uF 25 V M 3479347041
C418L/R	Mylar	0.012 uF 100 V J 3679123120	C304/C305	Electrolytic SG	100 uF 10 V M 3479310121
<b>CONNECTORS</b>			C306	Ceramic Disc	0.047 uF 50 V Z 3579473530
CN401	Lead Ass'y, 10P, 220 mm	436210223332	<b>CONNECTOR</b>		
CN402	Lead Ass'y, 5P, 400 mm	436205403332	CP502	FPC Plug, 18P	4428526305
<b>DIODE</b>			<b>IC</b>		
D401	1N4148M, Switching	2058322101	IC301	TA7291S	2168007204
<b>ICs</b>			<b>RESISTORS</b>		
IC401/IC402	KIA4559P/KIA75559P, OP Amp	2168206104	R301L/R	Carbon Film	51 kohm 1/5 W J 3069513970
<b>TRANSISTORS</b>			R302L/R	Carbon Film	6.2 kohm 1/5 W J 3069622970
Q401	BKTA1266Y/KTA1015Y, PNP	2208206105	R303/R304	Carbon Film	6.2 kohm 1/5 W J 3069622970
Q402	DTC114YS	2208622106	R305	Carbon Film	33 ohm 1/5 W J 3069330970
<b>RESISTORS</b>			R306	Carbon Film	15 kohm 1/5 W J 3069153970
R401L/R	Carbon Film	100 kohm 1/5 W J 3069104970			
R402L/R	Carbon Film	820 ohm 1/5 W J 3069821970			

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
R307	Carbon Film 4.7 kohm 1/5 W J	3069472970	R844/R845	Carbon Film 3.3 ohm 1/5 W J	3069339970
<b>MISCELLANEOUS</b>			<b>RESONATOR</b>		
W301	Wire Lug, #24, Black, 140mm	152624101457	X-TAL801	Resonator, CST10.00MTW	3938131750
22 (SW301)	Switch Push	4628059610	<b>MISCELLANEOUS</b>		
23 (VR301)	Volume Motor	3228019410	24 (SW801)	Switch Push	4628054410
S1	Screw #2 BTC 3 X 8 B	8109230083	28	Switch Tact	4658003710
S3	Screw #2 BTC 3 X 6 B	8109230063	29 (SEN801)	Remote Sensor, TFMT5380 (38 kHz)	2408005001
<b>END OF ASS'Y P.C.B VOLUME</b>			30 (FIP801)	FIP, 12 LM 8, FL Display	2328130301
			S1	Screw #2 BTC 3 X 8 B	8109230083
<b>P3 Ass'y P.C.B FRONT 054002007550</b>			<b>END OF P.C.B FRONT</b>		
<b>CAPACITORS</b>			<b>P3-1 Ass'y P.C.B DOLBY 054002007552</b>		
C801	CAP, FMOH473ZTP16, Backup 5.5 V	3409347314	<b>CAPACITORS</b>		
C802	Electrolytic SG 47 uF 25 V M	3479347041	C501/C502	Electrolytic SG 47 uF 25 V M	3479347041
C803	Ceramic Tubular 0.1 uF 50 V Z	3519104935	C503L/R	Electrolytic SA 4.7 uF 50 V M	3479247971
C804	Electrolytic SA 10 uF 50 V M	3479210071	C504	Electrolytic SA 3.3 uF 50 V M	3479233971
C805	Ceramic Tubular 12 pF 50 V J	3519120935	C505	Electrolytic SA 10 uF 50 V M	3479210071
C806	Electrolytic SA 33 uF 25 V M	3479233041	C507	Electrolytic SA 3.3 uF 50 V M	3479233971
C807-C814	Ceramic Tubular 100 pF 50 V J	3519101935	C508/C509	Electrolytic SG 47 uF 25 V M	3479347041
C815/C816	Ceramic Tubular 0.047 uF 50 V Z	3519473935	C510	Electrolytic SA 2.2 uF 50 V M	3479222971
C817-C821	Ceramic Tubular 100 pF 50 V J	3519101935	C511	Electrolytic SA 3.3 uF 50 V M	3479233971
C822	Ceramic Tubular 0.1 uF 50 V Z	3519104935	C512	Mylar 0.15 uF 63 V K	3679154297
C824	Ceramic Tubular 0.1 uF 50 V Z	3519104935	C513	Ceramic Tubular 150 pF 50 V J	3519151935
<b>CONNECTORS</b>			C514	Electrolytic SG 220 uF 10 V M	3479322121
CN801	Lead Ass'y, 8P 350 mm	436208353332	C515	Poly 120 pF 50 V J	3619121110
CN802	FPC Plug 15P	4428526690	C516	Poly 680 pF 50 V J	3619681110
CN803	FPC Plug 12P	4428526246	C517	Electrolytic SA 4.7 uF 50 V M	3479247971
<b>DIODES</b>			C518	Electrolytic SG 47 uF 50 V M	3479347071
D801-D816	1N4148M, Switching	2058322101	C519	Electrolytic SG 470 uF 10 V M	3479347121
LED801	LED, SPR54MVW3, Red/Green	2308222302	C520	Poly 680 pF 50 V J	3619681110
<b>IC</b>			C521	Mylar 0.022 uF 100 V J	3679223120
IC801	CPX82220-107Q, CPU	2138322182	C522	Poly 150 pF 50 V J	3619151110
<b>TRANSISTORS</b>			C523-C525	Electrolytic SG 220 uF 16 V M	3479322131
Q801	MPSA06Y, NPN	2208606114	C526/C527	Ceramic Tubular 0.1 uF 50 V Z	3519104935
Q802	KTC3198Y/KTC1815Y, NPN	2208606104	C528	Electrolytic SA 220 uF 16 V M	3479322131
Q803	DTA114YS, PNP	2208222105	C529	Mylar 0.22 uF 63 V K	3679224297
<b>RESISTORS</b>			C530	Mylar 0.068 uF 100 V J	3679683120
R801	Carbon Film 10 kohm 1/5 W J	3069103970	C531	Mylar 0.0039 uF 100 V J	3679392120
R802	Carbon Film 180 ohm 1/5 W J	3069181970	C532	Mylar 0.0047 uF 100 V J	3679472120
R803	Carbon Film 150 ohm 1/5 W J	3069151970	C533	Mylar 0.033 uF 100 V J	3679333120
R804	Carbon Film 22 kohm 1/5 W J	3069223970	C534	Electrolytic SA 10 uF 50 V M	3479210071
R805	Carbon Film 47 kohm 1/5 W J	3069473970	C535	Electrolytic SA 1 uF 50 V M	3479210971
R806	Carbon Film 10 kohm 1/5 W J	3069103970	C536/C537	Electrolytic SA 10 uF 50 V M	3479210071
R807-R814	Carbon Film 1 kohm 1/5 W J	3069102970	C538	Ceramic Tubular 470 pF 50 V J	3519471935
R815-R822	Carbon Film 47 kohm 1/5 W J	3069473970	C539L/R	Electrolytic SA 10 uF 50 V M	3479210071
R823	Carbon Film 1 kohm 1/5 W J	3069224970	C540	Ceramic Tubular 680 pF 50 V J	3519681935
R825	Carbon Film 3.3 kohm 1/5 W J	3069332970	C541	Mylar 0.0056 uF 100 V J	3679562120
R827-R831	Carbon Film 100 ohm 1/5 W J	3069101970	C542	Mylar 0.0047 uF 100 V J	3679472120
R832	Carbon Film 1 kohm 1/5 W J	3069102970	C543	Electrolytic SA 10 uF 50 V M	3479210071
R834/R835	Carbon Film 47 kohm 1/5 W J	3069473970	C544	Ceramic Tubular 0.1 uF 50 V Z	3519104935
R836	Carbon Film 470 ohm 1/5 W J	3069471970	C545-C547	Ceramic Tubular 100 pF 50 V J	3519101935
R837	Carbon Film 1 kohm 1/5 W J	3069102970	C548	Ceramic Tubular 0.01 uF 50 V Z	3519103935
R838	Carbon Film 330 ohm 1/5 W J	3069331970	C549	Electrolytic SA 1 uF 50 V M	3479210971
R839	Carbon Film 47 kohm 1/5 W J	3069473970	C550/C551	Electrolytic SG 47 uF 25 V M	3479347041
			C553/C554	Ceramic Tubular 100 pF 50 V J	3519101935
			C555/C556	Electrolytic SG 47 uF 25 V M	3479347041

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
C557L/R	Electrolytic SA 1 uF 50 V M	3479210971	R509	Carbon Film 1.8 kohm 1/5 W J	3069182970
C558L/R	Ceramic Tubular 0.001 uF 50 V Z	3519102935	R510	Carbon Film 3.9 kohm 1/5 W J	3069392970
C559L/R	Electrolytic SA 3.3 uF 50 V M	3479233971	R511	Carbon Film 4.7 kohm 1/5 W J	3069472970
C561/C562	Electrolytic SG 47 uF 25 V M	3479347041	R515	Carbon Film 3.3 kohm 1/5 W J	3069332970
C563L/R	Electrolytic SA 1 uF 50 V M	3479210971	R516/R517	Carbon Film 100 ohm 1/5 W J	3069101970
C564L/R	Ceramic Tubular 0.001 uF 50 V Z	3519102935	R519	Carbon Film 10 kohm 1/5 W J	3069103970
C565L/R	Electrolytic SA 3.3 uF 50 V M	3479233971	R520	Carbon Film 100 kohm 1/5 W J	3069104970
C566/C567	Electrolytic SG 47 uF 25 V M	3479347041	R521	Carbon Film 3.9 kohm 1/5 W J	3069392970
C568-C570	Ceramic Tubular 100 pF 50 V J	3519101935	R522L/R	Carbon Film 6.8 kohm 1/5 W J	3069682970
C571	Electrolytic SA 10 uF 50 V M	3479210071	R523L/R	Carbon Film 100 kohm 1/5 W J	3069104970
C572	Electrolytic SG 220 uF 16 V M	3479322131	R524	Metal Film 56 ohm 1 W J	3029560470
C573	Electrolytic SA 10 uF 50 V M	3479210071	R525	Carbon Film 56 ohm 1/5 W J	3069560970
<b>CONNECTORS</b>			R526	Carbon Film 1 Mohm 1/5 W J	3069105970
CN501	FPC Plug 19P	4428526310	R527	Carbon Film 47 kohm 1/5 W J	3069473970
CN502	FPC Plug 18P	4428526305	R528	Carbon Film 3.3 kohm 1/5 W J	3069332970
CN503	Lead Ass'y, 9P, 450 mm	436209453332	R529	Carbon Film 15 kohm 1/5 W J	3069153970
CP401	Wafer 10P	4428516910	R530	Carbon Film 8.2 kohm 1/5 W J	3069822970
CP581	Wafer 2P	4428508210	R531	Carbon Film 100 kohm 1/5 W J	3069104970
CP601	Wafer 3P	4428516210	R532	Carbon Film 39 kohm 1/5 W J	3069393970
CP802	FPC Plug 15P	4428526270	R533/R534	Carbon Film 8.2 kohm 1/5 W J	3069822970
<b>DIODES</b>			R535	Carbon Film 47 kohm 1/5 W J	3069562970
D501	Diode Zener, UZ 12.0BSC	2258599116	R536	Carbon Film 5.6 kohm 1/5 W J	3069102970
D502-D504	1N4148M, Switching	2058322101	R537	Carbon Film 1 kohm 1/5 W J	3069103970
<b>ICs</b>			R538	Carbon Film 10 kohm 1/5 W J	3069103970
IC501/IC502	KIA4559P/KIA75559P, OP Amp	2168206104	R539-R541	Carbon Film 1 kohm 1/5 W J	3069102970
IC503	LV-1000NA	2168017142	R542	Carbon Film 220 ohm 1/5 W J	3069221970
IC504	DRAM, uPD61256-08	2138430001	R543	Carbon Film 100 kohm 1/5 W J	3069104970
IC505	MC14094BCP	2138009115	R544	Carbon Film 220 ohm 1/5 W J	3069221970
IC506	LC7822	2168017139	R545-R547	Carbon Film 1 kohm 1/5 W J	3069102970
IC507	TC9176P	2138007124	R548/R549	Carbon Film 220 ohm 1/5 W J	3069221970
IC508/IC509	KIA4559P/KIA75559P, OP Amp	2168206104	R550-R552	Carbon Film 1 kohm 1/5 W J	3069102970
<b>TRANSISTORS</b>			R553L/R	Carbon Film 680 ohm 1/5 W J	3069681970
Q501	BKTA1266Y/KTA1015Y, PNP	2208206105	R554L/R	Carbon Film 1 Mohm 1/5 W J	3069105970
Q502	DTC114YS	2208622106	R555L/R	Carbon Film 4.7 kohm 1/5 W J	3069472970
Q503	DTA114YS, PNP	2208222105	R556L/R	Carbon Film 1.5 kohm 1/5 W J	3069152970
Q504/Q505	DTC114YS	2208622106	R557L/R	Carbon Film 2 kohm 1/5 W J	3069202970
Q506	KTC3198Y/KTC1815Y, NPN	2208606104	R558/R559	Carbon Film 100 ohm 1/5 W J	3069101970
Q507	DTA114YS, PNP	2208222105	R560L/R	Carbon Film 680 ohm 1/5 W J	3069681970
Q508L/R	KTD1302, NPN	2208606112	R561L/R	Carbon Film 1 Mohm 1/5 W J	3069105970
Q509	KTC3198Y/KTC1815Y, NPN	2208606104	R562L/R	Carbon Film 4.7 kohm 1/5 W J	3069472970
Q510	DTA114YS, PNP	2208222105	R563L/R	Carbon Film 1.5 kohm 1/5 W J	3069152970
Q511	KTD1302, NPN	2208606112	R564L/R	Carbon Film 2 kohm 1/5 W J	3069202970
Q512	KTC3198Y/KTC1815Y, NPN	2208606104	R565/R566	Carbon Film 100 ohm 1/5 W J	3069101970
Q513	DTA114YS, PNP	2208222105	R567	Carbon Film 2.2 kohm 1/5 W J	3069222970
Q514L/R	KTD1302, NPN	2208606112	R568L/R	Carbon Film 2.2 kohm 1/5 W J	3069222970
Q515	KTC3198Y/KTC1815Y, NPN	2208606104	R569-R571	Carbon Film 2.2 kohm 1/5 W J	3069222970
<b>RESISTORS</b>			R572L/R	Carbon Film 2.2 kohm 1/5 W J	3069222970
R501/R502	Carbon Film 100 ohm 1/5 W J	3069101970	R573	Carbon Film 820 ohm 1/5 W J	3069821970
R503	Carbon Film 10 kohm 1/5 W J	3069103970	R574	Carbon Film 1 kohm 1/5 W J	3069102970
R504L	Carbon Film 10 kohm 1/5 W J	3069103970	R575L/R	Carbon Film 1 kohm 1/5 W J	3069102970
R504R	Carbon Film 22 kohm 1/5 W J	3069223970	R576/R577	Carbon Film 220 kohm 1/5 W J	3069224970
R505L/R	Carbon Film 22 kohm 1/5 W J	3069223970	<b>SEMI FIXED RESISTOR</b>		
R506	Carbon Film 22 kohm 1/5 W J	3069223970	VR501	Semi, 10 k (B)	3248010343
R507	Carbon Film 1.5 kohm 1/5 W J	3069152970	<b>RESONATOR</b>		
R508	Carbon Film 750 ohm 1/5 W J	3069751970	X-TAL501	Resonator, CST8.00MTW	3938131590
<b>MISCELLANEOUS</b>			<b>MISCELLANEOUS</b>		
			W501	CTB 0135 LV DIAMOND DL B#16	4359855035

Ref. No.	Description	Mfr. Part No.	Ref. No.	Description	Mfr. Part No.
<b>END OF P.C.B DOLBY</b>					
<b>P3-2</b>	<b>Ass'y P.C.B HEADPHONE</b>	<b>054002007554</b>	C960L/R	Ceramic Tubular 100 pF 50 V J	3519101935
<b>RESISTORS</b>					
R295L/R	Metal Film 470 ohm 2 W J	3029471570	C961L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C291L/R	Ceramic Tubular 560 pF 50 V J	3519561935	C962C	Ceramic Tubular 100 pF 50 V J	3519101935
<b>CONNECTOR</b>					
CN291	Lead Ass'y, 12P, 350 mm	435112353401	C963L/R	Ceramic Tubular 100 pF 50 V J	3519101935
<b>MISCELLANEOUS</b>					
25 (SW291)	Switch Push	4628043810	FE901	FM Tuner, FE407-G60	3928801890
26 (SW292)	Switch Push	4628049210	L101L/R	Coil, Inductor, 50 uH	2648601470
27	Jack, Phone	4438005010	R922D	Carbon Film 27 kohm 1/5 W J	3069273970
<b>END OF P.C.B HEADPHONE</b>					
<b>P3-3</b>	<b>Ass'y P.C.B VOLUME LED</b>	<b>054002007556</b>	R923	Carbon Film 27 kohm 1/5 W J	3069273970
CNT581	Lead Ass'y, 2P, 180 mm, 2.5 mm Pitch	4358102184	55	Terminal, Antenna	4408108210
LED581	LED, SLC-22VRS, Green	2308220324	<b>P2-1</b>	<b>Ass'y P.C.B POWER SUPPLY</b>	<b>054002007941</b>
<b>END OF P.C.B VOLUME LED</b>					
<b>Ass'y P.C.B POWER SUPPLY</b>					
<b>Ass'y P.C.B TONE</b>					
<b>Ass'y P. C. B VOLUME</b>					
<b>Ass'y P.C.B FRONT</b>					

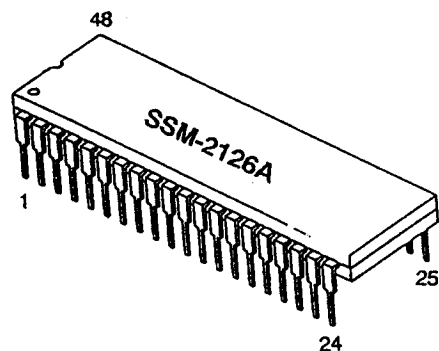
**The following parts are only for European version.**

<b>P1</b>	<b>Ass'y P.C.B MAIN</b>	<b>054002007932</b>
C101L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C104L/R	Ceramic Tubular 2200 pF 50 V J	3519222935
C120L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C121L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C122L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C123L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C124L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C125L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C126L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C127L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C128L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C129L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C130L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C131L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C132L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C133L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C134L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C135L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C136L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C137L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C138L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C139L/R	Ceramic Tubular 100 pF 50 V J	3519101935
C259	Ceramic Tubular 2200 pF 50 V J	3519222935
C260	Ceramic Tubular 3300 pF 50 V J	3519332935
C260L/R	Ceramic Tubular 2200 pF 50 V J	3519222935
C261L/R	Ceramic Tubular 2200 pF 50 V J	3519222935
C262L/R	Ceramic Tubular 2200 pF 50 V J	3519222935
<b>P2</b>	<b>Ass'y P.C.B TUNER</b>	<b>054002007939</b>
C616-C617	Ceramic Tubular 3300 pF 50 V J	3519332935
C618	Ceramic Tubular 2200 pF 50 V J	3519222935
C928D	Ceramic Tubular 82 pF 50 V J	3519820935
C929D	Ceramic Tubular 100 pF 50 V J	3519101935
C940L/R	Poly 180 pF 50 V J	3619181110

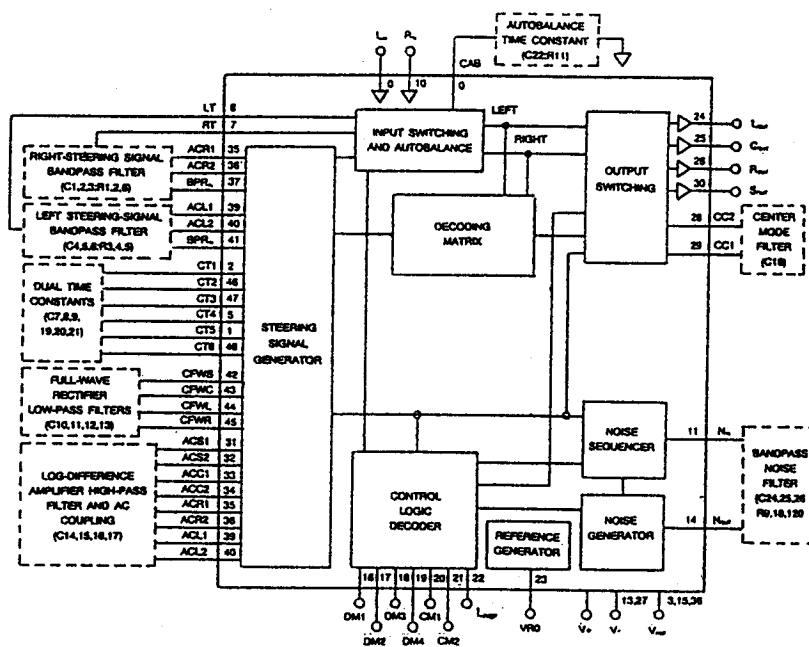
# SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM

SSM-2126A : IC201

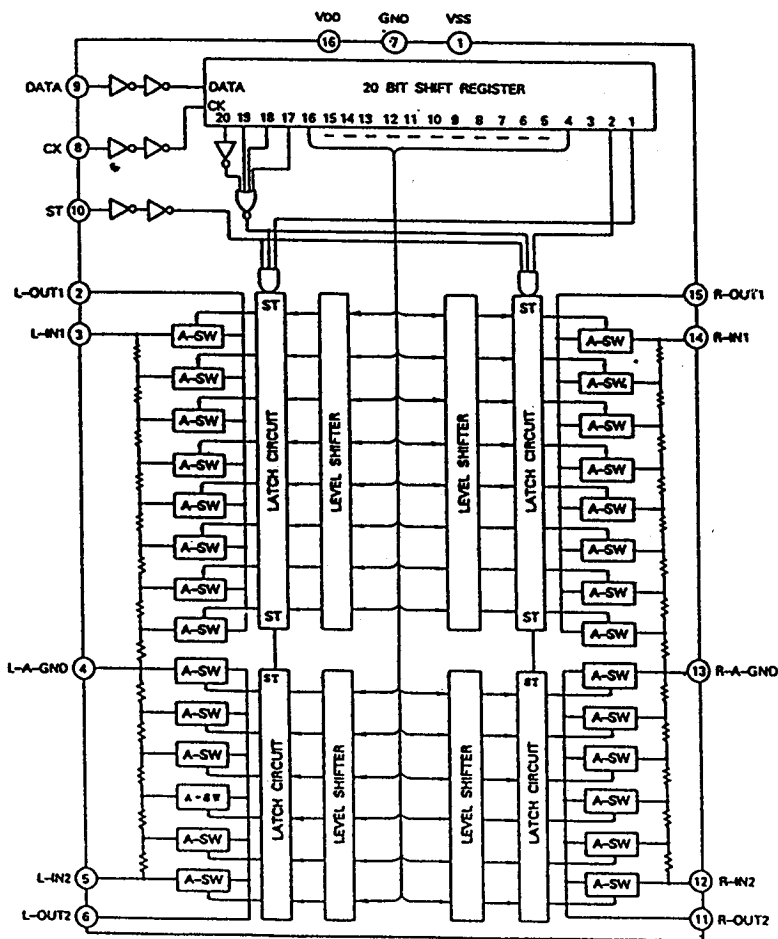
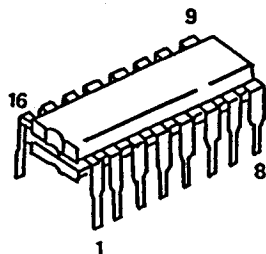
Package Outline



Block Diagram

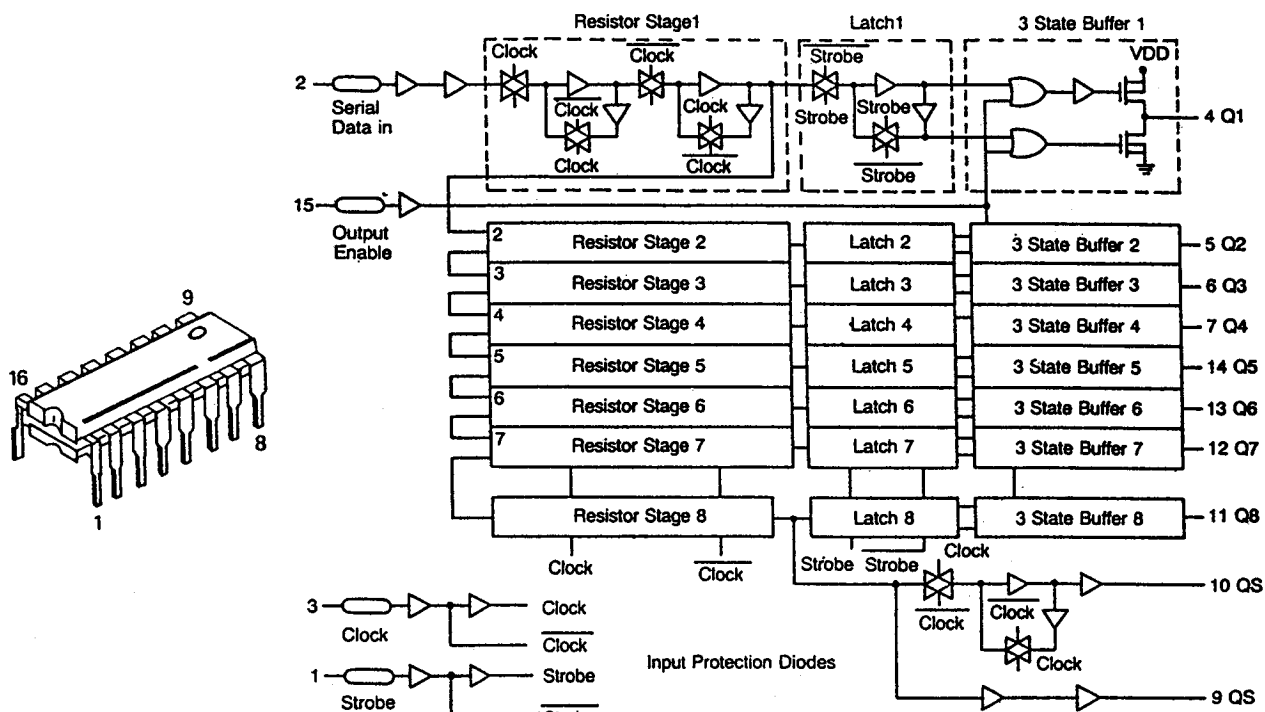


TC9176 : IC507

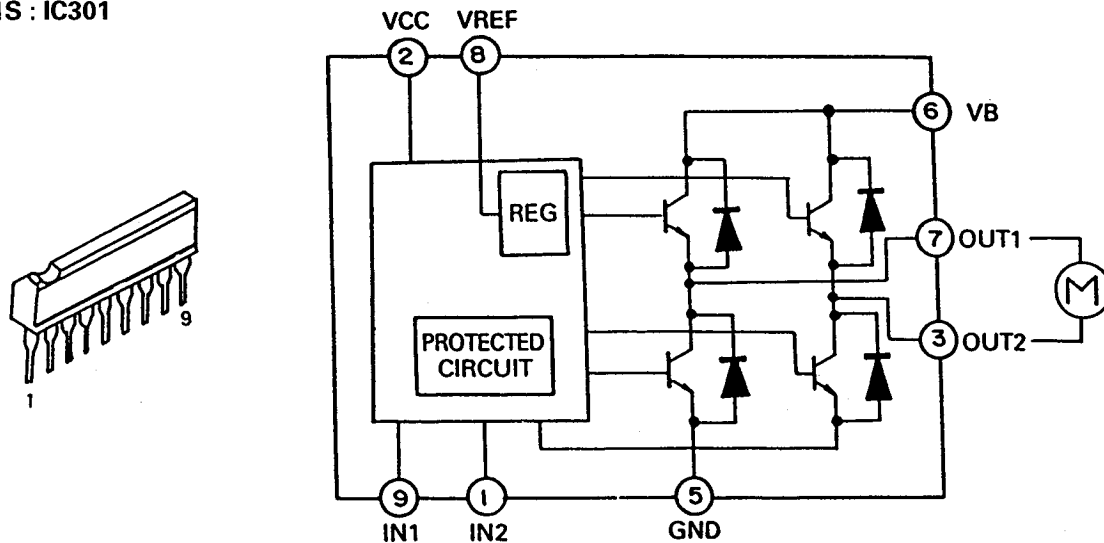




MC14094 : IC105, IC202, IC505



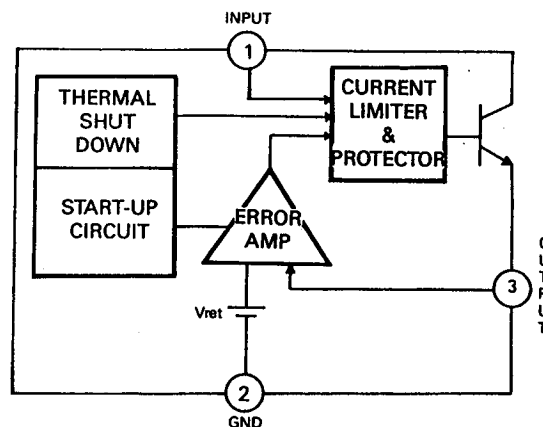
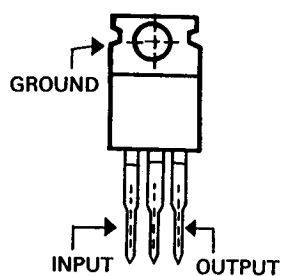
TA7291S : IC301



GD78XX : IC241, IC242, IC701

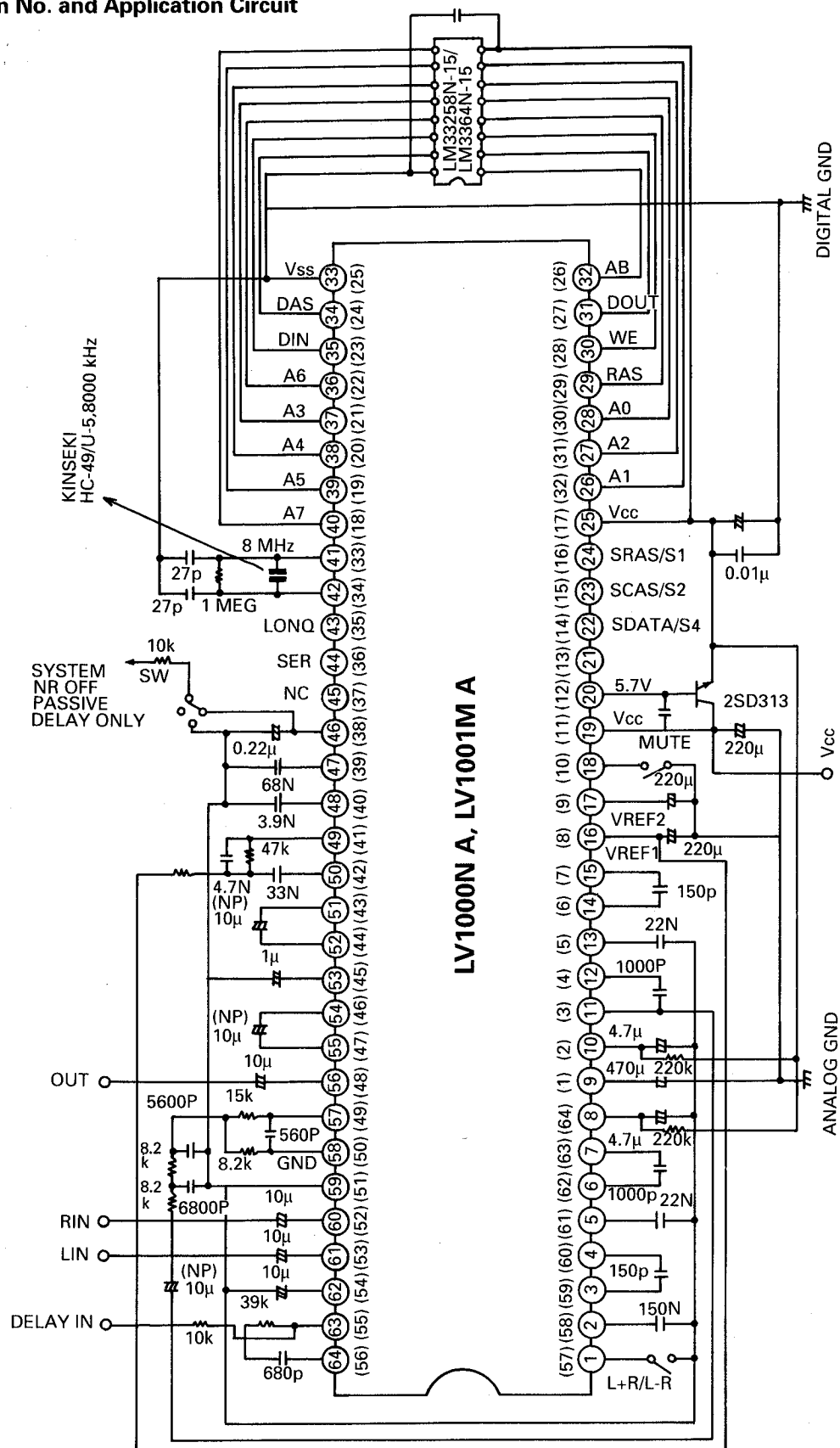
Block Diagram

Front View



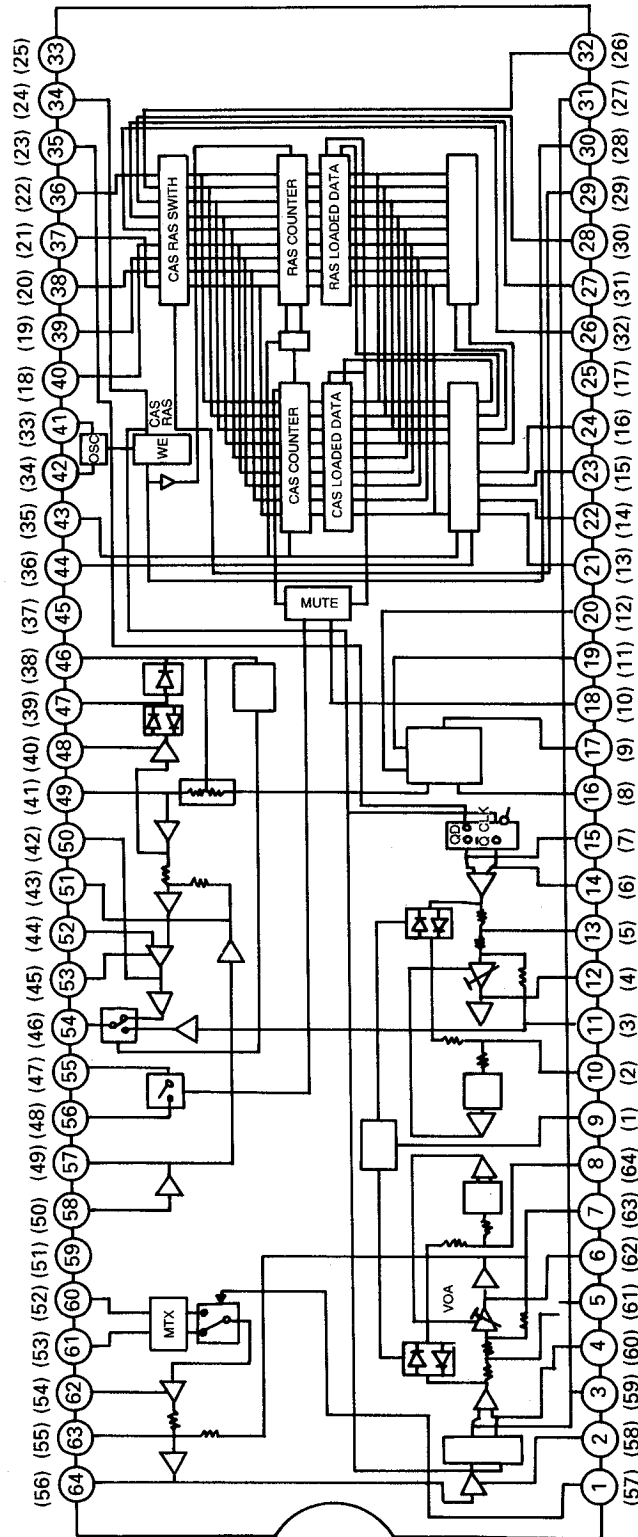
**LV-1000NA: IC503 (Dolby Surround Passive decoder)**

### 1. Pin No. and Application Circuit



( ) : Pin No. for LV1001MA

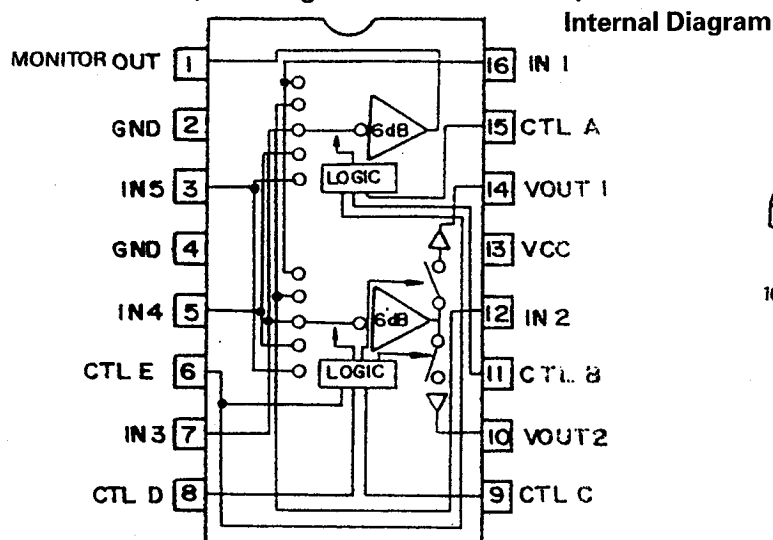
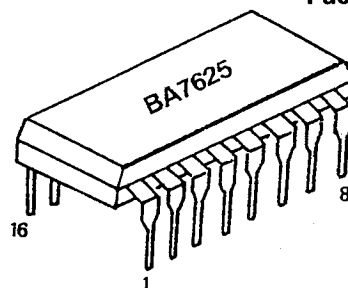
## 2. Block Diagram



( ) : Pin No. for LV1001MA

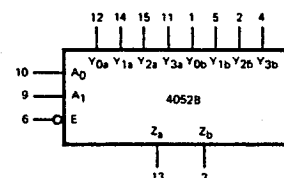
## 3. PIN Functions

Pin No.	Explanations
1(57)	Delay input signal mode select switch (L+R/L-R)
2(58)	Filter for supply voltage on comparator
3,15(7, 59)	Input filter for rectifier
4,14(6, 60)	Input filter for rectifier
5,13(5, 61)	Capacitor for pre-emphasis
6,12(4, 62)	Capacitor for sliding band filter
7(63)	Capacitor for silding band filter and local decoder output
8,10(2, 64)	Capacitor for smoothing of rectifier output
9(1)	De-couple capacitor for threshold voltage
11(3)	Capacitor for sliding band filter and Delayed output
16(8)	Reference voltage
17(9)	Reference voltage
18(10)	Mute control
19(11)	V <sub>cc</sub>
20(12)	Output for V <sub>DD</sub>
21(13)	Clock input for serial input, data input for parallel input mode
22(14)	Data input for serial input, data input for parallel input mode
23(15)	Column address selection for serial input, data input for parallel input mode
24(16)	Row address selection for serial input, dat input ofr parallel input mode
25(17)	V <sub>DD</sub>
26 to 40	Connection to memory device
(18 to 32)	Connection to memory device
33(25)	V <sub>ss</sub>
41(33)	X'tal resonator for oscillator
42(34)	X'tal resonator for oscillator
43(35)	Long or Short mode selection
44(36)	Serial or Parallel mode selection
45(37)	For test mode
46(38)	Smoothing for NR rectifier
47(39)	Smocthing for NR rectifier
48(40)	Capacitor for weighting on side chain path
49(41)	Input for variable resistor
50(42)	NR output
51(43)	7kHz low pass filter output
52(44)	Input for NR
53(45)	Capacitor for de-couple on NR
54(46)	Delay output or NR output
55(47)	Input for mute circuit
56(48)	Output for mute circuit
57(49)	Output for 7 kHz low pass filter
58(50)	Input for 7 kHz low pass filter
59(51)	GND
60(52)	Input for right channel
61(53)	Input for left channel
62(54)	Capacitor for de-couple on Fixed matrix output
63(55)	Noise shaping and delay input
64(56)	Noise shaping output

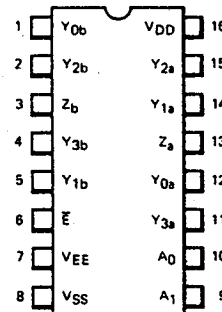
**BA7625 : IC104 (Video signal switch for AV amplifier)****Package Outline****GD 4052B : IC103 (Dual 4 -Channel analog multiplexer/demultiplexer)****TRUTH TABLE**

INPUTS			CHANNELS			
E	A <sub>1</sub>	A <sub>0</sub>	Y <sub>0</sub> -Z	Y <sub>1</sub> -Z	Y <sub>2</sub> -Z	Y <sub>3</sub> -Z
L	L	L	ON	OFF	OFF	OFF
L	L	H	OFF	ON	OFF	OFF
L	H	L	OFF	OFF	ON	OFF
L	H	H	OFF	OFF	OFF	ON
H	X	X	OFF	OFF	OFF	OFF

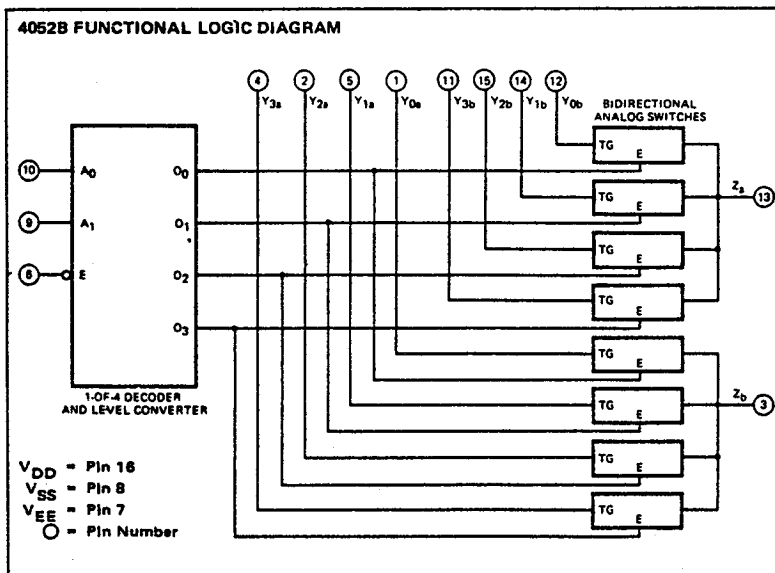
L=LOW Level H=HIGH Level, X=Don't care

**LOGIC SYMBOL**

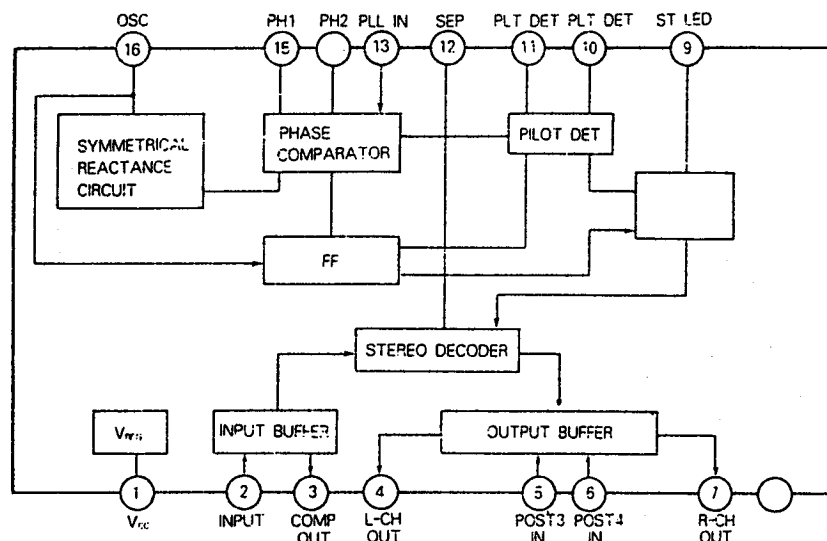
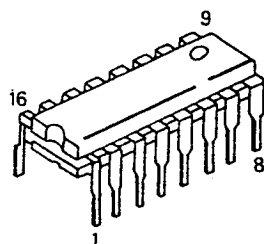
V<sub>DD</sub> = PIN 16  
V<sub>SS</sub> = PIN 8  
V<sub>EE</sub> = PIN 7

**CONNECTION DIAGRAM  
DIP (TOP VIEW)**

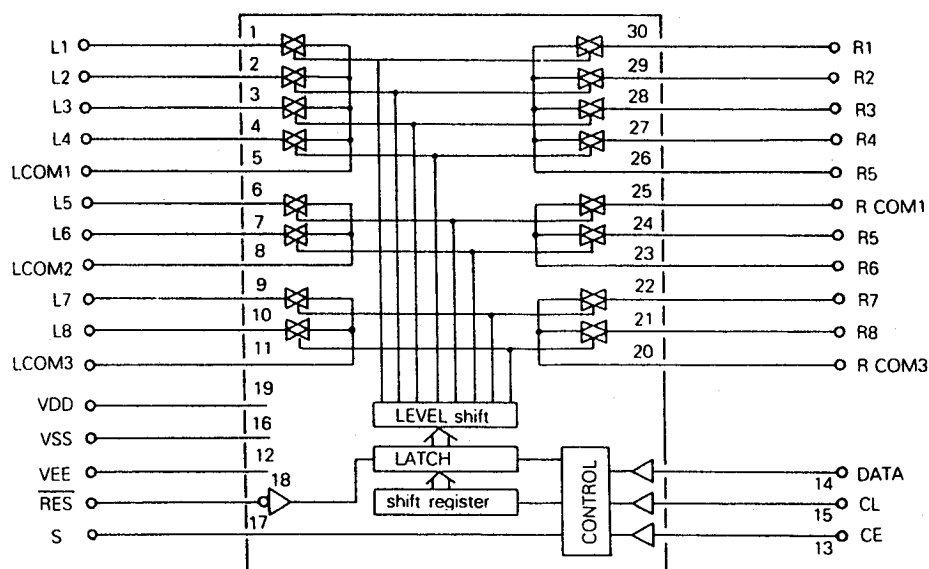
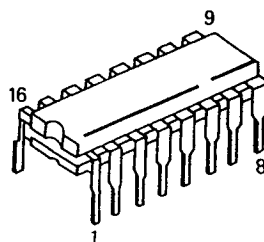
**NOTE:**  
The SO Package has the same pinouts (Connection Diagram) as the Dual In-line Package.



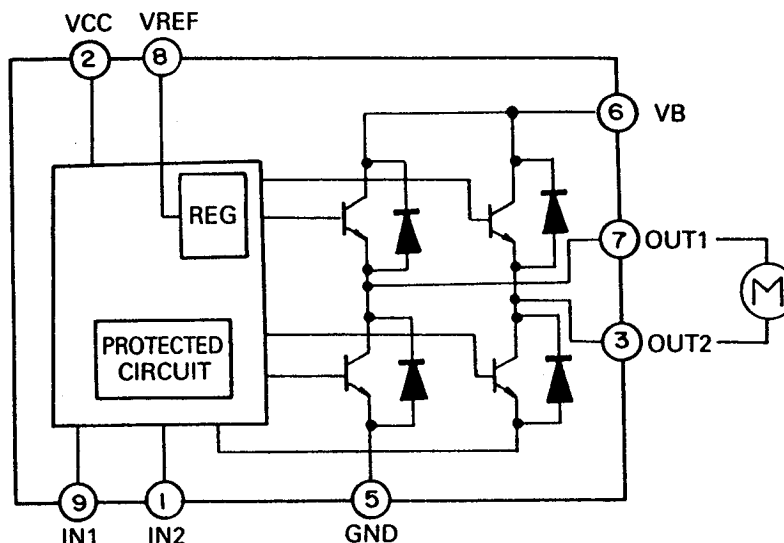
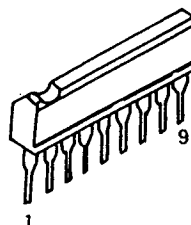
KA2265 : IC903 (AVR25 ONLY)



LC7821 : IC101, IC102

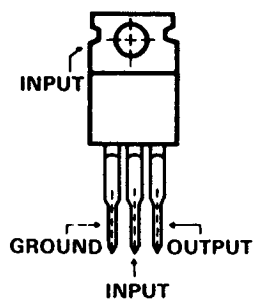


TA7291S : IC109, IC506

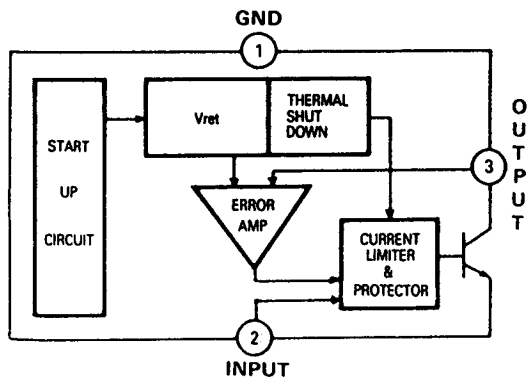


GD79XX : IC243

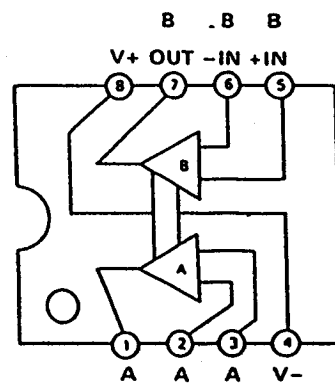
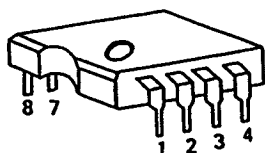
Front View



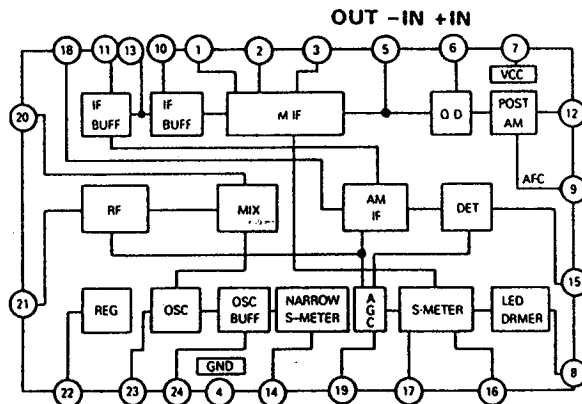
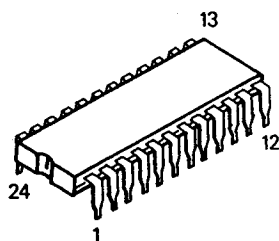
Block Diagram



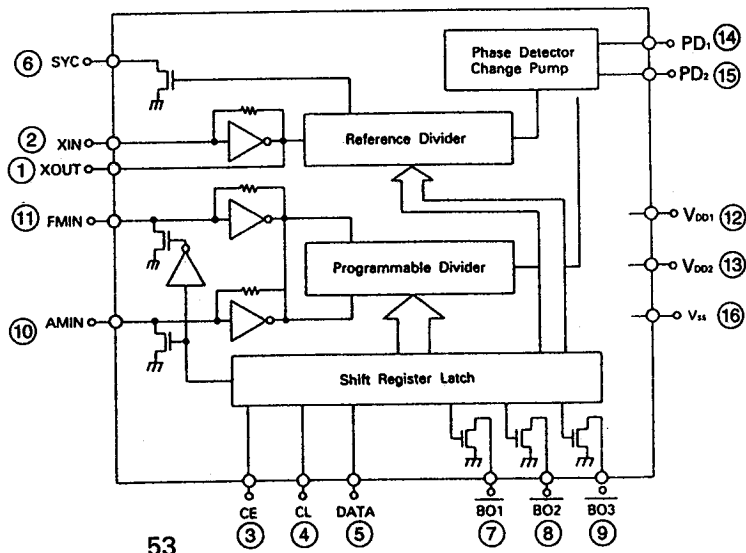
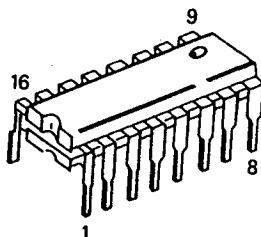
KIA4559P/KIA7559P : IC106, 107, 108, IC401, IC402  
IC501, IC502, IC508, IC509



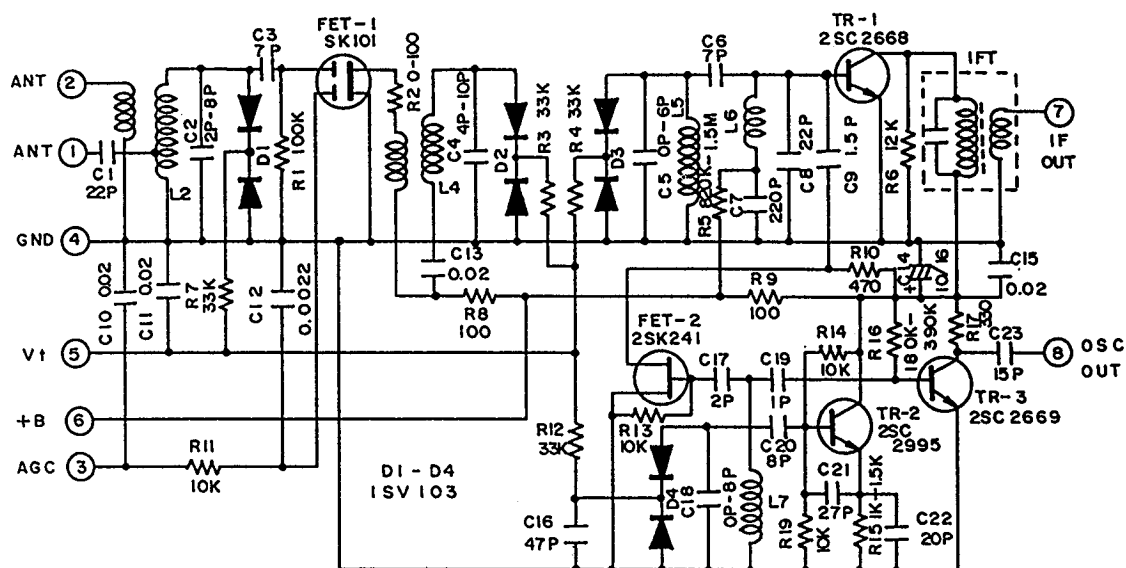
LA1266 : IC902 (AVR25 ONLY)



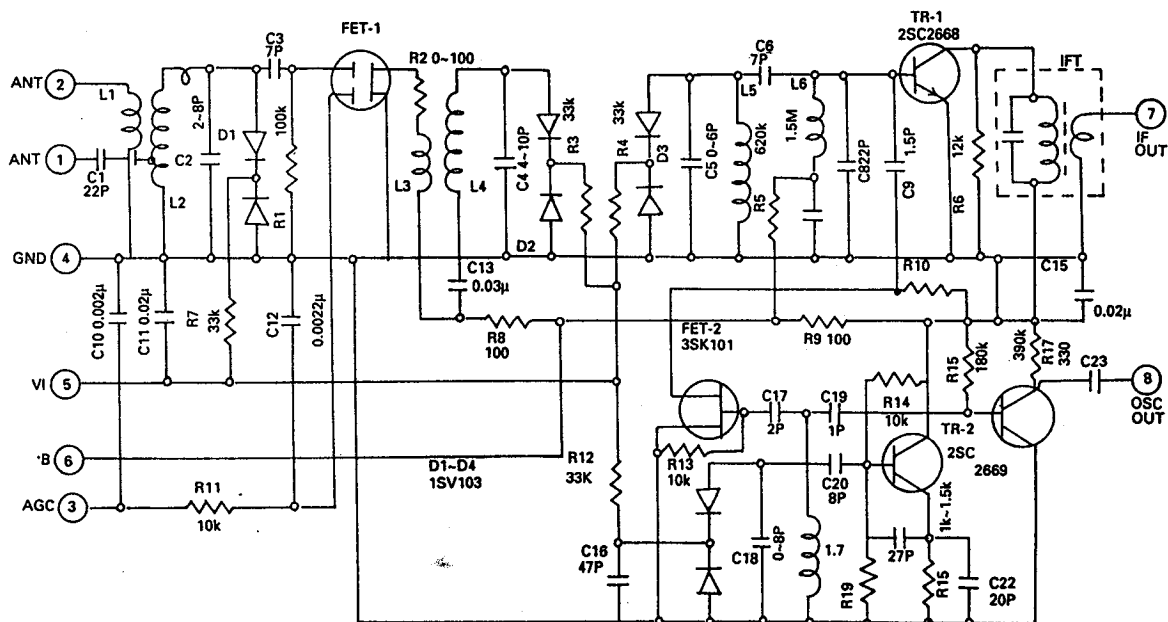
LM7001 : IC901 (AVR25 ONLY)



## FRONT-END FE407-A15 (USA/CA): FE901

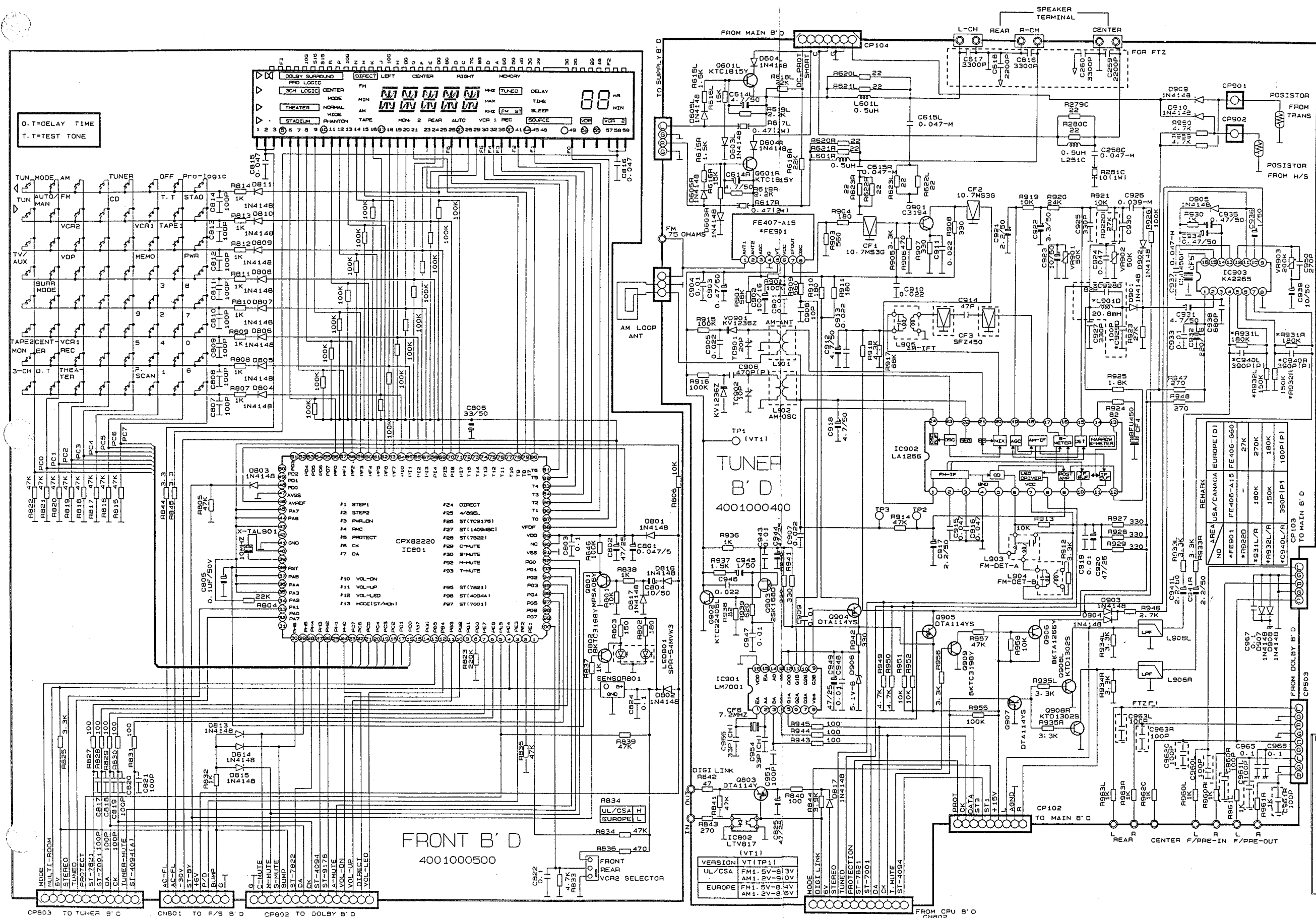


## FE407-G60 (Europe) : FE901

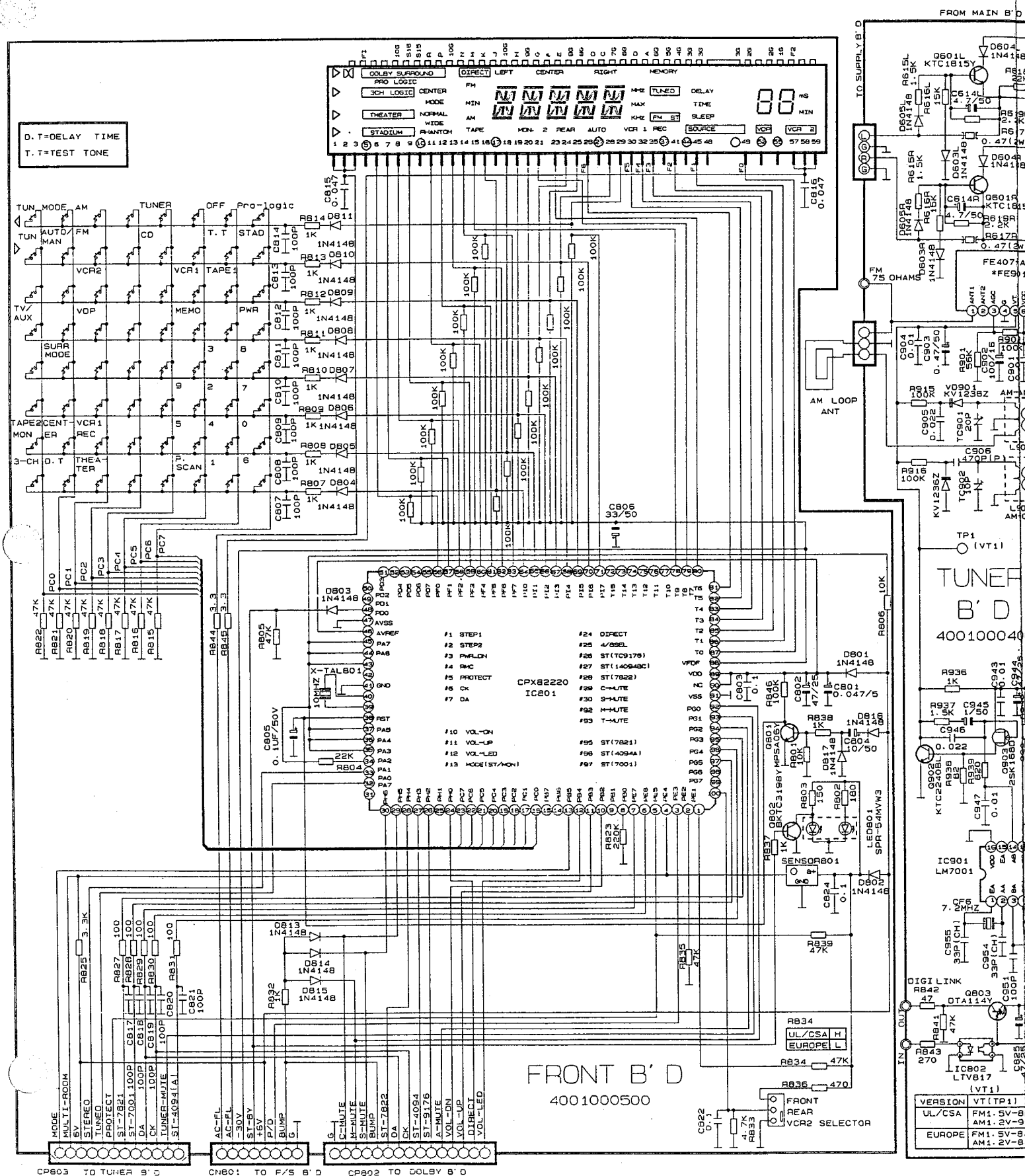




## SCHEMATIC DIAGRAM I

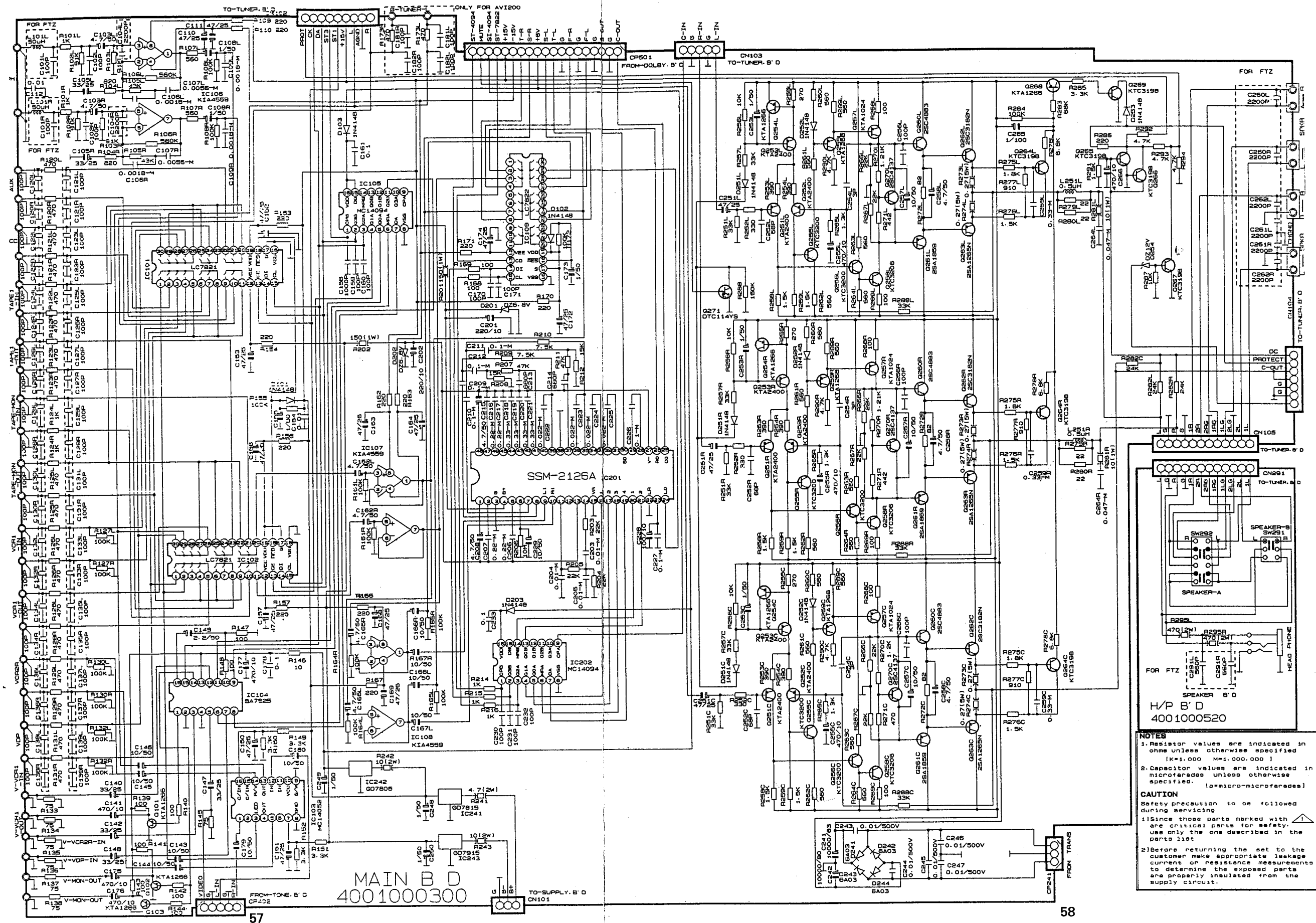


### SCHEMATIC DIAGRAM I

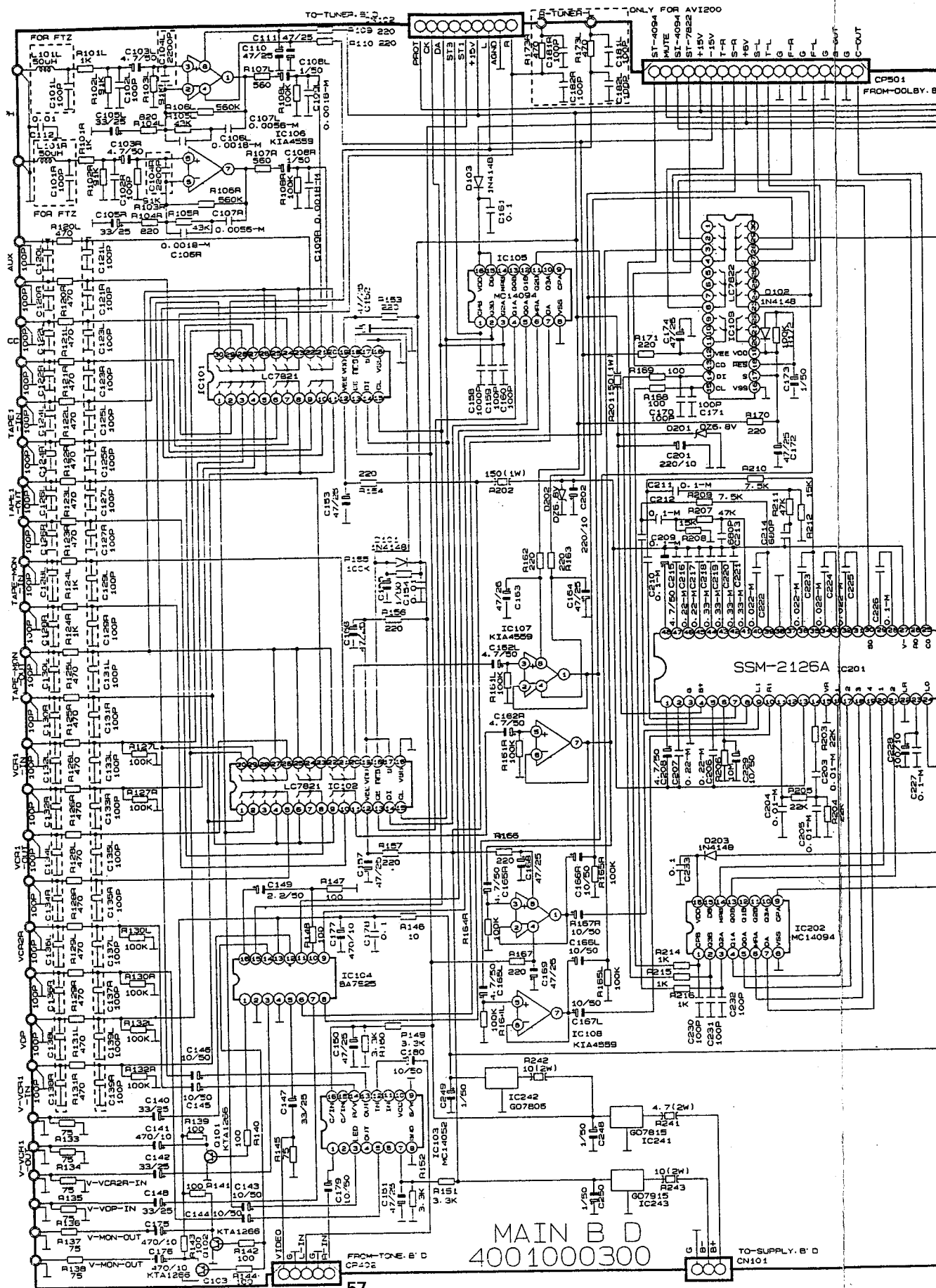


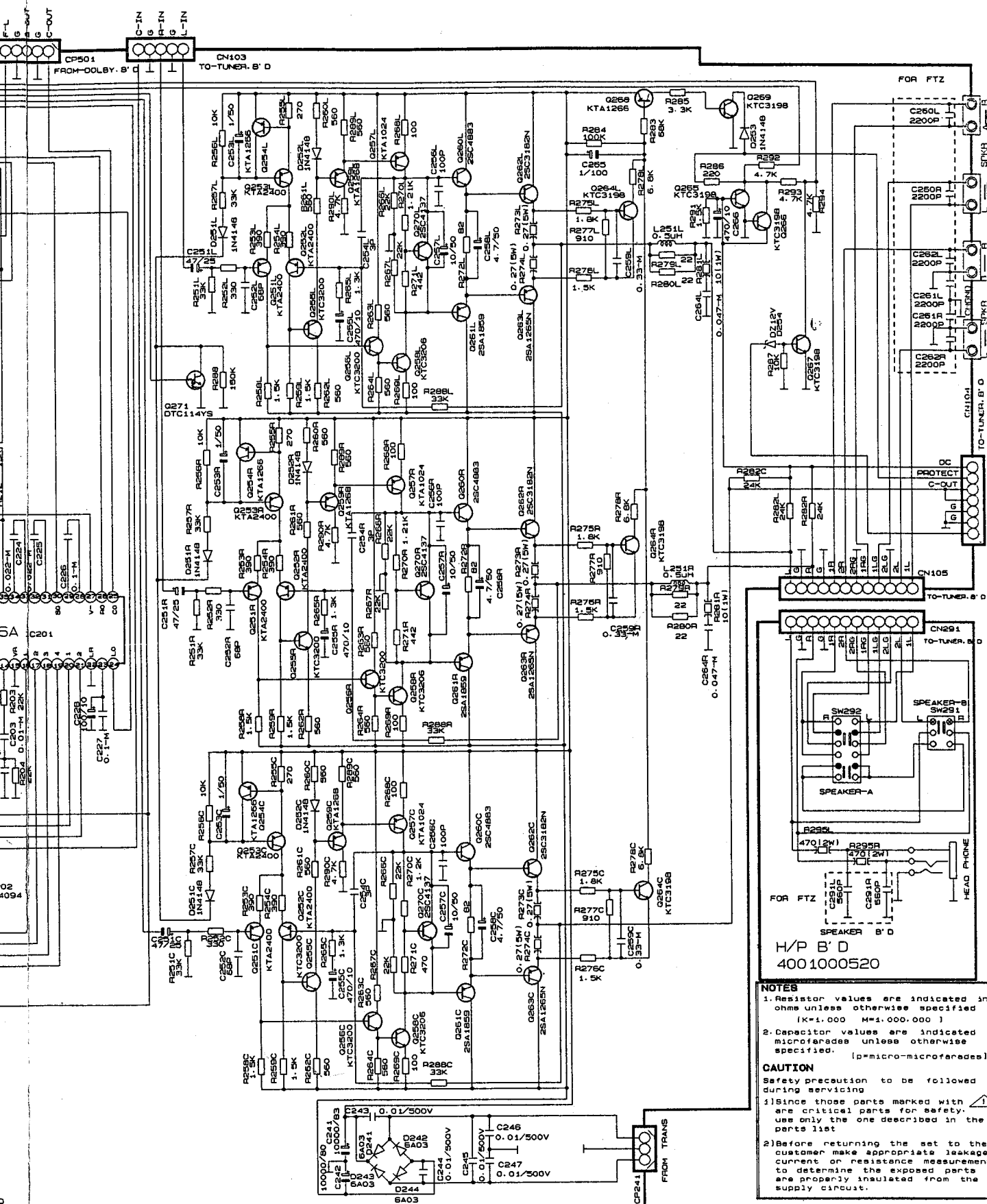


### SCHEMATIC DIAGRAM II



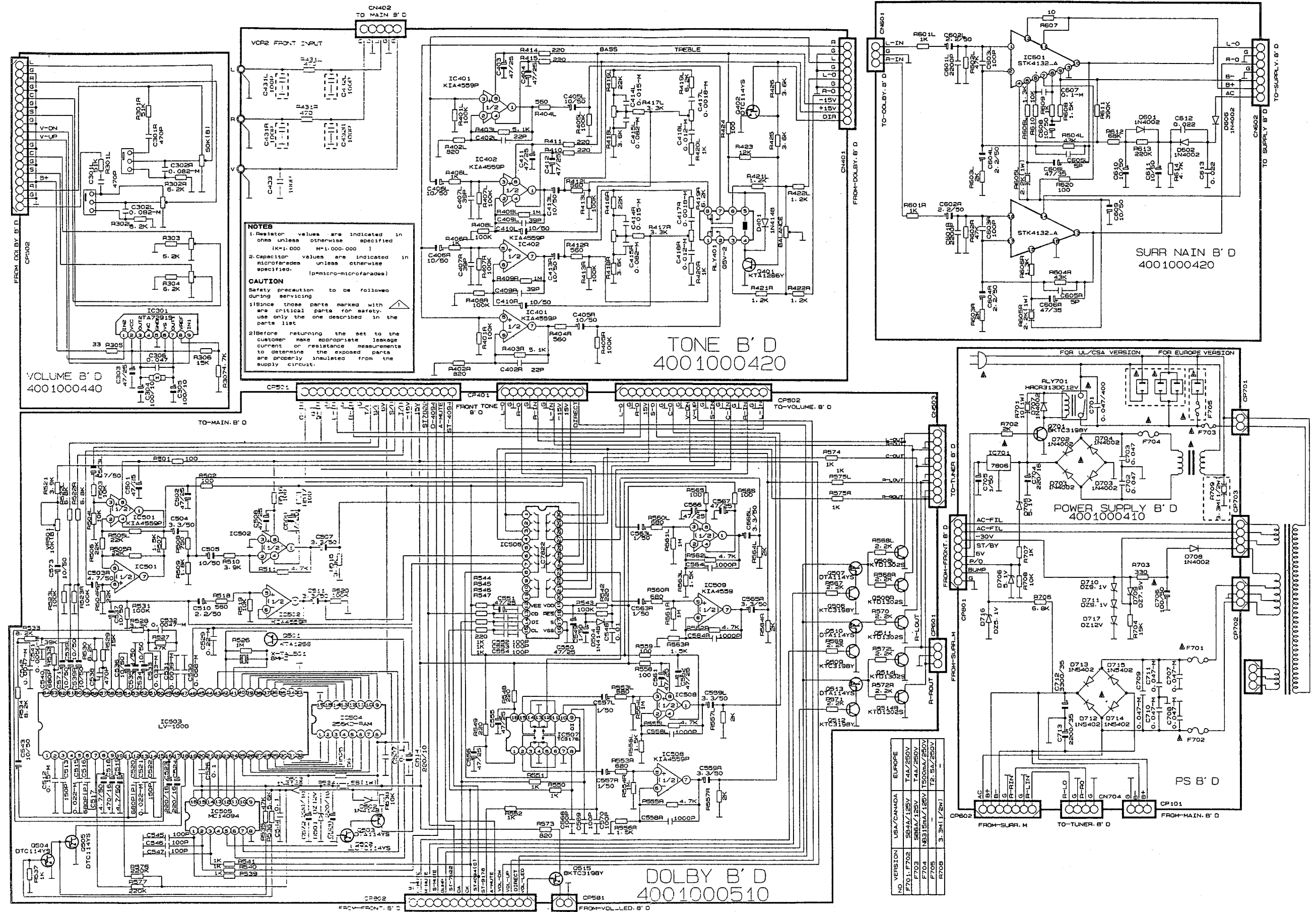
## SCHEMATIC DIAGRAM II



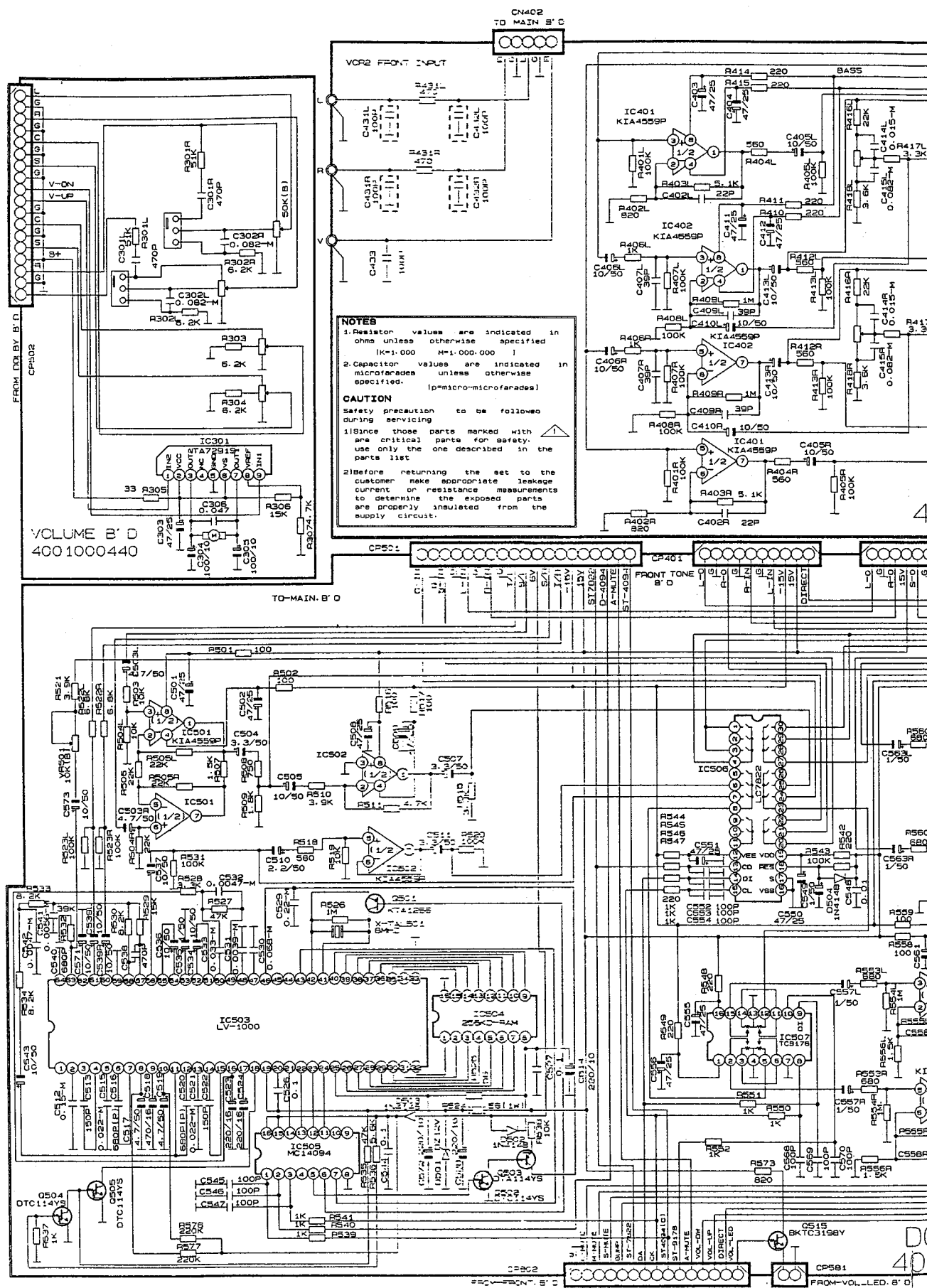




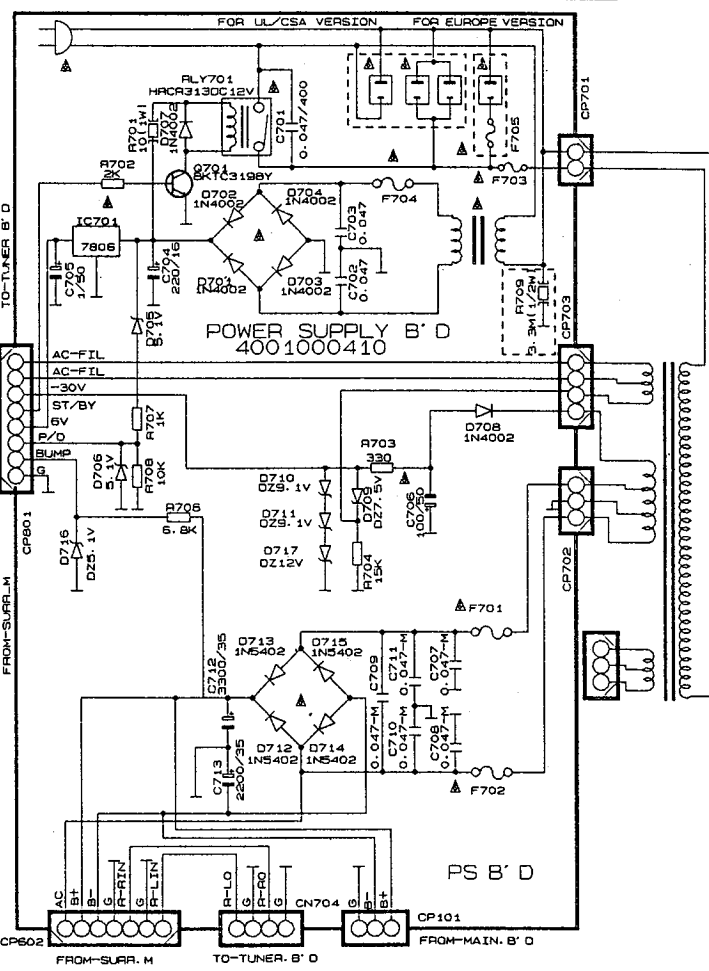
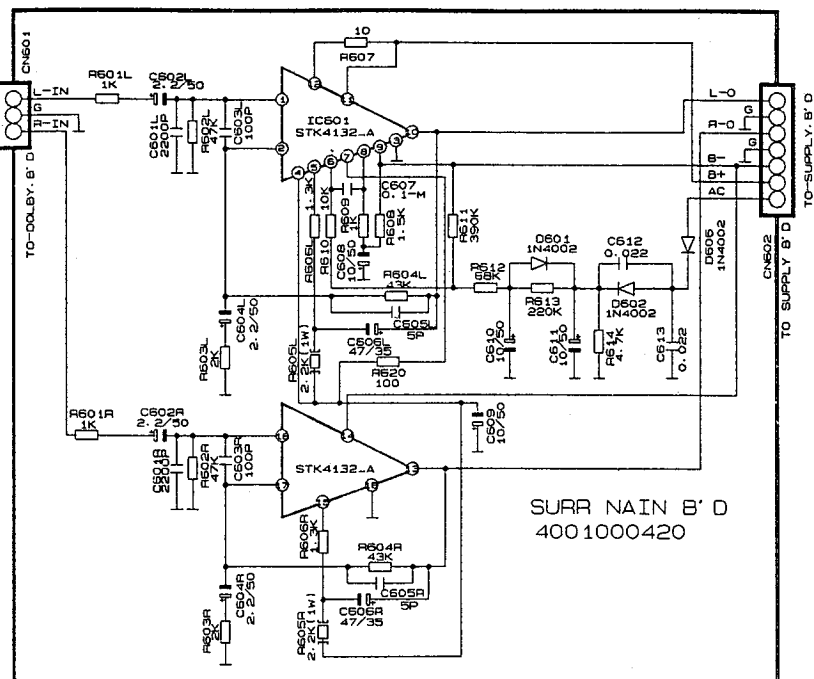
### SCHEMATIC DIAGRAM III



### SCHEMATIC DIAGRAM III

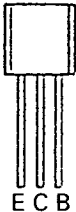


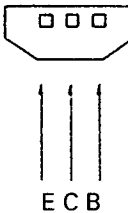
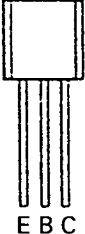


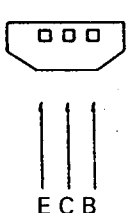
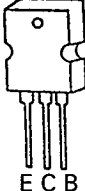



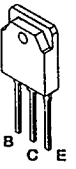





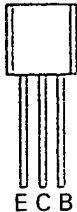


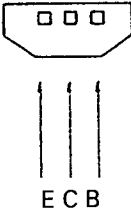
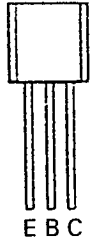


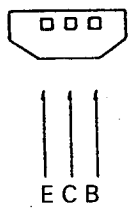
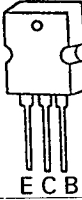



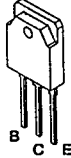



NO	VERSION	USA/CANADA	EUROPE
F701	F702	S84A/125V	T4A/250V
F703		S86A/125V	T4A/250V
F704		NB315mA/125V	T500mA/250V
F705		-	T2.5A/250V
F709		3.3M(1/2W)	-

## TRANSISTORS LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW
TDA 1302 KTC3200/KTC2240 KTC3198/KTC1815 KTC1923/KTC3194 KTA2400 KTA1268/KTA970 KTA1266/KTA1015		
DTC114YS DTA114YS		
MPSA06		
KTA1024 KTC3206		
2SC4137		
2SK168A		
2SA1265N-O 2SA1859A-Y 2SC4883A-Y 2SC3182N-O		
TERMINAL NAME		
B→BASE C→COLLECTOR E→EMITTER		

# TRANSISTORS LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW
TDA 1302 KTC3200/KTC2240 KTC3198/KTC1815 KTC1923/KTC3194 KTA2400 KTA1268/KTA970 KTA1266/KTA1015		
DTC114YS DTA114YS		
MPSA06		
KTA1024 KTC3206		
2SC4137		
2SK168A		
2SA1265N-O 2SA1859A-Y 2SC4883A-Y 2SC3182N-O		
TERMINAL NAME		
B→BASE C→COLLECTOR E→EMITTER		